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METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY is a monthly publication devoted to:

A. Current Abstracts in English on important meteorological literature in every language.

B. Bibliographic references to other items of interest to the profession.

C. Cumulative, annotated bibliographies on subjects of immediate and special interest to meteorologists.

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METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

MALCOLM RIGBY, Editor

Vol. 1 JANUARY 1950 No. 1.

SPECIAL FEATURES IN THIS ISSUE

Review of 30 Current Meteorological or Geophysical Periodicals

A Cumulative, Annotated Bibliography on Atmospheric Pollution

(For complete table of contents see back cover)

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"Science moves, but slowly, slowly creeping on from point to point."
LOCKSLEY HALL, **Tennyson.** 1842

PREFACE

During the past 30 years the **American Meteorological Society** has made every effort to eep its members informed of the existence of contemporary meteorological publications ıroughout the world. From the very first this was done through the inclusion in the **Bulletin** f occasional reviews, abstracts or notices. During the war there was a demand for more ɔnsistent presentation and greater coverage, so from September 1942 through December 1948, ystematically arranged and classified bibliographies or abstracts were a regular feature of the **ulletin.** Although these Bibliographies became more and more popular, as improvements ere made, they did not provide complete and prompt enough coverage or sufficient information ɔ suit the rapidly increasing number of Professional Meteorologists in this country. Only bout 25% of the pertinent literature could be listed and an even smaller percentage abstracted. urthermore it was impossible to provide a satisfactory method of cumulative indexing so ıat the material would be useful for reference purposes.

Meteorological Abstracts and Bibliography is the latest of many sincere attempts, both ere and abroad, to satisfy all of the demands of all of the possible users of such a bibli- graphy. In so doing it is inevitable that no one will be really satisfied. However, by building ı the good features of past bibliographies, by making a few improvements recommended by ther abstracting agencies and by recent surveys of Scientific Abstracting, and finally with ıe indulgence and help of the readers of this periodical, it is hoped that the publication will nprove in quality, coverage and promptness, and that it will become increasingly satisfactory oth as a medium for keeping abreast of current literature and as a handy reference tool for ıose embarking on new research or bibliographic projects in the fields of theoretical or applied ieteorology or climatology.

A few of the improvements which have been introduced after a careful survey of previous ıd current efforts along the same and parallel lines are:

(1) Use of **Subject Headings** to serve as an approach to standardized English terminology for use in filing and indexing, and to supplement the Universal Decimal Classification (UDC) numbers.

(2) Auxiliary notations to enable the reader to quickly evaluate types or sources of material that cannot be expressed by means of either UDC numbers or Subject Headings. At present two such notations will be used: "*" to indicate **good data sources,** and "†" to indicate **good bibliographic sources.**

(3) **Standard library symbols** to indicate some particular library where the material has been located. At present only those libraries in Washington, Boston and (in the next issue) New York can be included, and coverage is by no means complete.

(4) A section devoted exclusively to systematic description or review of various types of publications (periodicals, serials, synoptic charts, climatological publications, annual reports, International Meteorological Organization publications, etc., both current and past).

(5) Regular **Cumulative Annotated Bibliographies** on special subjects which are believed to be of vital concern to large numbers of meteorologists today. The possible number of such bibliographies is so great and the literature on each subject so vast that it will be impossible to satisfy anyone who demands either an exhaustive bibliography or one which covers a wide range of subject matter. However, by including in each issue from 150 to 250 items of interest to meteorologists, obtained after a thorough search of the best special libraries in Washington, New York and Boston, a systematic coverage of current and past literature on a number of subjects will be at hand for reference after a year or two. Above all these bibliographies will

serve to integrate in time the vast amount of current material which has been being and will be published.

(6) After exhausting the backlog of important material accumulated since the l Bibliography appeared in the Bulletin (Dec. 1948) we will endeavor to make **compl coverage** of all the articles in the twenty or more current journals which are devo entirely to meteorology, and all pertinent articles in a dozen or so geophysi geographical or other journals which regularly contain a few meteorological pa (see list on page 9). This list will be revised from time to time.

In both the **Cumulative Bibliographies** and the **Current Abstracts** the interests of theoretical as well as the interests of the so-called practical meteorologist will be kept in mi Suggestions for improvements in arrangement, style, choice of subject headings, length abstracts, choice of material for abstracting or of subjects for special bibliographies, indicat of new or possibly overlooked publications and even brief abstracts of material which might difficult to locate will be gladly received. While it is impossible to reply to every suggest or to answer every criticism, such contributions will be kept in mind and will have considera weight in decisions as to further improvements or alterations in the form and substance of publication.

Lastly it is a pleasure to acknowledge the inspiration, encouragement and actual assista which has been given to the editor and to the staff of this project by the following officials colleagues: Capt. H. T. Orville (U. S. N.), Dr. Charles F. Brooks, Robert Stone and Kenn Spengler of the American Meteorological Society; Dr. F. W. Reichelderfer, Dr. Harry Wex Merrill Bernard and R. C. Aldredge of the U. S. Weather Bureau; Mr. David J. Haykin, C Webb and Richard Bray of the Library of Congress; Ole Groos and Donald Max of the A Materiel Command, Geophysical Research Division, Library, and to many others. Espe credit should be given to Mr. Ralph Burhoe, formerly assistant to C. F. Brooks at Blue H who worked out the basic method of presenting abstracts which has been followed her F inally we wish to pay grateful tribute to Dr. C. E. P. Brooks, the father of Meteorolog Bibliographies and Classification, who is at present devoting considerable time and thou to help make this publication a success, or at least a forward step in the science of Meteorolo

Note: The editor will be grateful if anyone who finds a **factual** error in any of th abstracts or bibliographies will send in a correction (either on a post card or a 3″ x card) so that future errors of a similar nature may be avoided. If the error is seriou correction will be printed in the earliest possible issue of this publication. However order to avoid unnecessary correspondence the reader should distinguish between **fact** or **technical** errors and **inconsistencies in style** (including punctuation, capitalizati order of entries, bracketing, bold facing of type, etc.). Many such errors in **style** h been noted in this issue but it is believed that the delay involved in correcting them wo more than offset the improvement. In future issues such errors will be reduced t minimum. Errors in **spelling,** especially of names of authors, are considered as **fact** errors and should by all means be called to our attention.

If any reader has knowledge of manuscript or unpublished material which he would to have included in these abstracts, it would be appreciated if he would let us know location of the material and of what it consists.

INTRODUCTION

:ope of material: An attempt will be made to confine the entries in this journal to material falling ıder that branch of Geophysical Science which deals with the Atmosphere and its boundaries; to)plications of astrophysics, geophysics, mathematics, mechanics, oceanography, statistics and ermodynamics which will help the meteorologist solve his problems; and to applications of meteor- ogy and climatology which will help the specialist in aeronautics, agriculture, aviation, commerce, restry, hydrology, industry, insurance, medicine, teaching, military or naval science, etc., solve s problems.

ature or form of material: Material abstracted will not be limited to that appearing in current riodicals, but will embrace communications of any form or type transmitted by any means or edium, whether it be picture, chart, table or text presented in a lecture, manuscript, circular, mphlet, monograph, book or serial or if it be communicated by television, radio, voice, photostat printing on glass, paper, parchment, canvas or clay tablet. However, to avoid repetition, prefer- ce will be given to **original** works appearing in final printed form whereas, preprints, abstracts, mmaries, digests, reprints or translations of minor works into other languages than English will be thheld as a rule, or mentioned only in connection with the more permanent or widely disseminated rm of publication. A notable exception will be made in the case of a scholarly digest of several icles on one given subject, which in itself appears to be a contribution to knowledge. Com- ehensive bibliographies fall in this category.

lection of material for abstracting: Because of time and space limitations, not even one half of e 3,000 or more meteorological articles which appear each year can be abstracted or the abstracts nted. As a rule the material that is the best known to American Meteorologists will be given e least space, and on the contrary important material that would be difficult or expensive for most ıders to obtain will be described in more detail to help the reader to better evaluate the work in ınection with his own needs and limitations as to time and funds for obtaining photo or micro- nts. Hence, if an entry is without an abstract or is only briefly annotated, it does not mean ıt the article is unimportant, but may mean that the title is self-explanatory or that the article so easily available that the reader would do better to look it up and evaluate it for himself. This justified in view of the increasing availability of standard scientific periodicals and the current ıctice of putting abstracts (sometimes in several languages) at the beginning of every original ıtribution.

cency: In this publication, literature will be considered current if it is of immediate interest d has not yet come to the attention of meteorologists, generally. Emphasis will be placed on terial published during the last year if appearing in standard periodicals readily available to all mbers of the profession. Material from more obscure sources, or material of the highest quality ich has not yet been abstracted or listed in the publications of the American Meteorological ciety will be included even though five or ten years old.

ıguages: The language of the article will in every case be the language of the original title unless erwise noted. Translated titles not appearing on the publication itself will be in brackets, [ ]. he material appears originally in Chinese, Japanese, Hebrew, Arabic or Finnish it will be necessary rely on the author's or editor's translation of the titles and abstracts. Material in English or in other of the European Languages, (French, German, Russian, Spanish, Portuguese, Italian, tch, Norwegian, Swedish, Polish, Serbian, Bohemian, Bulgarian or Hungarian) will be secured l checked, and if possible original abstracts or annotations provided, except where otherwise ed. Author's abstracts will be used only if unusually clear and concise, in which case credit l be given to the writer of the abstract.

angement of material: There are many possible ways to arrange bibliographic material. Some liographies are arranged **chronologically**, giving the user the historical perspective. If one is erested in the development or progress of some field, he can follow through from the earliest known rk to the most recent. On the other hand if he is already acquainted with past developments l wishes to quickly locate material which is so recent that he may have overlooked it, he can rt with the latest and go back, in time, concentrating on the recent items and merely scanning r the older material. In the cumulative bibliographies on various special subjects which appear his journal this arrangement has been chosen, and it should be stressed that such an arrangement s not imply that the most recent material is in any way superior to the older, or vice-versa.

Another obvious way of arranging material is alphabetically **by author,** but this arrangement s not associate material of the same kind, age, or subject unless by chance the same author has

written several works on the same subject. Such occasions can be taken care of by means of author index, if necessary.

The third and in libraries the most useful way of arranging material is **by subject,** but there many systems for doing this and a vast amount of time and effort is spent by librarians and bi ographers in devising or revising schemes for arrangement by subject. The ultimate aim of s efforts is to associate all material of a kind in mutually close proximity. But since the sum of worlds literature forms a continuous spectrum rather than discrete classes or categories, the ela ration or application of a really rational scheme of arrangement seems almost hopeless. The m widely used of such schemes belong to one or other of two major systems. The first is that of form a dictionary type **Subject Catalogue,** (file or index) based on the assignment to each entry (whet book, article or any other presentation) of one or more Subject Headings representing the catalogu guess as to the major fields of interest of which the said entry is comprised. Such a catalogue properly compiled, is made up of a large number of unrelated groups of related items, much a the case with the inhabitants along a city street, where all of the members of each domicile related but each family is unrelated to that on either side. The advantages of this system evident when the mass of literature becomes very great or is highly specialized. The alter system of arrangement is that of **Classification,** where an attempt is made to form an array wh will represent the entire spectrum of knowledge covered by the library or bibliography, so that e subdivision will not only embrace related material, but every class or subdivision is closely relate the adjacent classes. Most special libraries use this system in shelving books, but attempts to it to avoid assignment of **Subject Headings** usually run into serious difficulties arising from wh masses of material on a subject being lost or forgotten when, as is usually the case, cross-refere are inadequate. A worse practice is that of attempting to make the Subject Headings approxim a classification scheme, that is to try and group several Subject Headings on related subjects toge by using inverted headings (e.g.: **Instruments, anemometers; Instruments, barometers; Instrume cloud-measuring . . . Instruments, radiation, pyrheliometers, Ångström,** etc., etc.). Use of s inverted headings always leads to so much grief that after a time the whole system has to be revi often running into terrific expense and confusion.

The logical outcome of past experience with the above mentioned difficulties is the adoption has been done in this journal, of a dual system: use of direct Subject Headings for cataloguin indexing, and use of the most applicable classification scheme for arrangement of material wit undue repetition of entries.

Subject Headings: In the selection of subject headings preference has been given to the appro recommended by the Library of Congress, Subject Cataloguing Division. Briefly, a Subject Hea should be the most direct, concise, and unambiguous term or phrase that the English Langu provides, and one that will come readily to mind when someone wishes to locate, or to file, a refer to a work embracing one or several distinct topics. Of course reference must be made from general to the particular subject or vice-versa. Intermediate steps should be avoided if poss For instance if an article on **Anemometers** were listed under **Wind Instruments, Instrume Methods of Observation of Wind,** or **Apparatuses** instead of simply under **Anemometers,** either cataloguer or the user would have to rack his brain to decide under what term **Anemometers** w most likely be listed. There are many exceptions which must be made in practice, especially w dealing with chemical or botanical terms which are complicated and have no equivalent in language but Latin. As a rule, however, most subjects in meteorology have been assigned sim terms which can be found in a Meteorological Glossary. When new terms like **Zonal circula Jet stream, Radar storm detection, Spherics** and so on are coined and become so popular th whole literature on each subject springs up, then such terms must be added to the list of sub headings, without any attempt at circumlocution to avoid the use of a trite phrase. For i article is about the **Jet Stream,** then it should be filed under that term, regardless of one's opi of that theory.

Universal Decimal Classification (UDC) numbers. Of the many existing systems of classif material on theoretical and applied meteorology, the one that is the most widely used at this is the "Brussels" or UDC system. The breakdown for Meteorology (551.5) was elaborated by C. E. P. Brooks, Th. Hesselberg and Tor Bergeron and was recommended by the Internati Meteorological Organization at its Conference of Directors in Warsaw (1935). European Serv and Societies quickly adopted this system for use in libraries and in published bibliographies, even printed the numbers on monographs or articles in periodicals. The American Meteorolo Society began arranging bibliographic material according to the UDC system in 1942, and since time the United States Weather Bureau has adopted it for use in its Library.

A recent poll of members of the American Physical Society revealed that less than 25% c members ever used this system or understood it, whereas in Europe, probably due to the tremen language problem, practically all abstracting journals and researchers make use of the UDC sys In America, the Dewey system, is more widely known, but it is not detailed enough for use in clas ing Periodical Literature as distinguished from Books or Monographs which usually are no

ighly specialized. The Library of Congress system of classification (which makes use of letters as ell as numbers so as to achieve greater ease and accuracy in copying) is likewise not detailed enough, lthough in some respects it is more rational than the UDC system.

Consequently in this journal we will make use of the UDC system which, in spite of its weaknesses, is the most widely used in International Meteorology, but reserve the right to make minor hanges and amendments. Allowance must be made for some confusion when the system itself is evised as was the case in the past two years.

Refinements of some of the subdivisions (Instruments, Microclimatology, Bioclimatology and thers) were worked out by Dr. C. E. P. Brooks, Dr. Hesselberg and Robert Stone at the 2nd Session f the Commission on Bibliography and Publications of the IMO at Toronto in September 1947, nd these changes were approved by the IMO Conference of Directors at Washington in October 947. The changes have finally been approved by the International Federation of Documentation FID) which has authority over the UDC. The details of the revised scheme will be presented in his publication as soon as possible. At present it will suffice to give the rudiments of the system or the benefit of those who are not acquainted with its outline and who might want to use it in etting up a filing system for abstracts or references.

The basic principle of the Decimal System of Classification as initiated by Melvil Dewey and aborated in the UDC system, is that all knowledge is one unit, and for convenience this unit, is ivided into ten main classes. Each of these classes is in turn divided into ten divisions, those again nto ten divisions and so on to as many decimal places as is necessary. Thus the number 0.5 stands or "pure science," and 0.55 for earth sciences, or geology and geophysics, and by further sub-division 551.5 is used to designate the whole of Meteorology. Since every number begins with 0., it is ustomary to drop that and so 551.5 usually stands for Meteorology. Furthermore to avoid the onfusion arising from long series of numbers (for instance non-periodic variations in wind at the arth's surface is given the number 551.553.5), many libraries, substitute the letter "M" for the 51.5 portion, thus reducing 551.553.5 to M53.5 which is more easily remembered and accurately opied.

However, since these published abstracts may often be used by libraries or researchers in other elds than Meteorology, to whom the letter M has no significance, the practice will be to write the umbers out in full, with all but the 551.5 in **bold face type** so the reader can easily tell the variable from the invariable portion of the number. Caution should be exercised when dealing with rticles in the field of applied meteorology or climatology, oceanography, mathematics, etc., since bviously all of these subjects are outside of the class of pure meteorology and hence may be assigned umbers which may not begin with 551.5. For instance oceanography is 551.46, terrestrial magetism 55.038, thermodynamics as a branch of physics is 536.7 and so on.

Auxiliary symbols are used to designate the form of work, geographical sub-divisions, or to dicate relationships to other fields of knowledge. For instance the colon ":" is used to indicate elationship or connection. The numbers 016 represents "Bibliography" so 551.5:016 indicates a bliography on general meteorology; 551.5:92 meteorology in relation to biography; or 551.58:93 imatology in relation to history. The order is reversible so that a library which keeps all bibliographies together could indicate the first example cited as 016:551.5 or bibliography in relation to eteorology or 93:551.58 could mean history in relation to climatology. In a like manner any two bdivisions of meteorology can be linked together with a colon to show their interrelationship.

Parentheses ( ) are used to distinguish the form or nature of the work. If the number in parenheses begins with 0 then form of publication is indicated. For example (02) indicates handbooks, xtbooks or manuals; (03) dictionaries, encyclopedias, glossaries or lexicons; and Geographical ubdivisions are also indicated in parentheses, for instance (44) represents France, (87) Venezuela, 97.1) Yugoslavia and (268) the Arctic Ocean. Complete lists of symbols used will be published ong with the complete revised UDC scheme in some later issue.

The general scheme is as follows:

UNIVERSAL DECIMAL CLASSIFICATION NUMBERS FOR METEOROLOGY

PURE SCIENCE
Earth Sciences: geology and geophysics
1 General Geology, Dynamic Geology, Physical Geography
1.5 Meteorology. Climatology

Major Subdivisions of 551.5

1.5 METEOROLOGY, CLIMATOLOGY
1.50 Practical meteorology (methods, data, forecasts)

551.51/9 Theoretical and descriptive meteorology
551.51 Structure, mechanics and thermodynamics of the atmosphere
551.52 Radiation and temperature
551.54 Atmospheric pressure
551.55 Wind
551.57 Aqueous vapor and hydrometeors
551.58 Climatology
551.59 Various phenomena and influences

Further Subdivisions of 551.5

551.50 PRACTICAL METEOROLOGY (METHODS, DATA, FORECAST AND OTHER APPLICATIONS)
01 Methods of observation and computation. Observatories
06 Observational data (including weekly, monthly, and annual means)
08 Meteorological instruments
09 Weather forecasts and other applications
09.2 Daily meteorological bulletins. Daily weather charts
09.31 Forecasts from daily synoptic charts
09.33 Forecast for longer periods (week, month or season)
551.51 STRUCTURE, MECHANICS AND THERMODYNAMICS OF THE ATMOSPHERE IN GENERAL
10 Physical properties of the atmosphere
11 Mechanics and thermodynamics of the atmosphere
13 General circulation of the atmosphere
15 Atmospheric formations and disturbances
15.2 Tropical cyclones, hurricanes, typhoons
551.515.3 Tornadoes, waterspouts, whirlwinds and dust devils
15.4 Thunderstorms
15.8 Air masses and fronts
551.52 RADIATION AND TEMPERATURE
21 Radiation
21.1 Solar radiation in general
21.3 Absorption, emission, scattering and transmission in the atmosphere
24 Temperature of the air
24.37 Frosts
25 Earth temperature
551.54 ATMOSPHERIC PRESSURE
42 Distribution at earth's surface. Isobars
43 Variations of pressure
47 Upper air pressure
551.55 WIND
51 Structure, microvariations, gustiness, turbulence
53 Variations of wind at earth's surface
54 Vertical distribution in the turbulent layer near earth's surface
55 Winds of special localities
55.1 Trade winds, doldrums
55.8 Sand and dust bearing winds
57 Upper air wind
58 Vertical component of air motions (new subdivision)
551.57 AQUEOUS VAPOR AND HYDROMETEORS
71 Humidity
73 Evaporation
74 Condensation and deposits
74.1 Physics, nuclei
74.2 Artificial condensation
74.7 Condensations and deposits on objects in the upper air
75 Fog and mist
76 Cloud
77 Precipitation in general
77.53 Influence of human activities (artificial precipitation)
78 Special forms of precipitation
551.578.1 Rain and drizzle
78.4 Snow, sleet, granular snow, ice needles
78.7 Hail and soft hail
79 Soil moisture and hydrology. Hydrometeorology

551.58 CLIMATOLOGY
82 Climatology of particular places, regions and parts of the earth. Climatological monographs
83 Variations of climate
83.7 Palaeoclimatology
84 Microclimatology
85 Types of climate. Classification
86 Bioclimatology
87 Upper air climatology
551.59 VARIOUS PHENOMENA AND INFLUENCES
91 Visibility
93 Optical phenomena in the atmosphere
94 Electrical phenomena in the atmosphere
94.21 Electricity of thunderstorms
94.221 Disruptive discharges (lightning)
94.5 Aurora
94.6 Radio transmission and atmospherics regarded as phenomena of atmospheric electricity
96 Acoustic phenomena in the atmosphere
96.1 Propagation of sound. Audibility. Zones of silence

Associative Headings

51.5: METEOROLOGY IN RELATION TO:
:016 General Bibliographies
:06 Societies. Institutions. International Meteorological Organization
:92 Biography
:93 History
(02) Handbooks. Textbooks. Manuals
(03) Encyclopedias. Lexicons
(04) Addresses. Lectures. Popular articles
(05) Periodicals
(08) Collected works
(09) History
(26) Marine data

Selected Geographical Headings

(4)	Europe	(481)	Norway
(5)	Asia	(52)	Japan
(6)	Africa	(54)	India
(7)	North America	(68)	South Africa
(8)	South America	(71)	Canada
(9)	Pacific Ocean	(73/9)	U. S. A.
(42)	England	(798)	Alaska
(431/5)	Germany	(81)	Brazil
(439.1)	Hungary	(82)	Argentina
(44)	France	(914)	Philippines
(45)	Italy	(94)	Australia
(47)	U. S. S. R.	(99)	Antarctic continent

Numbering system: The number at the head of each entry (1–35 or A–169) indicates the exact issue of this journal and the location of the entry in the body of that issue. These numbers will be used in most references and indexes, (rather than indexing by page number) in order to avoid the delay involved in indexing after the page proofs are made up. Use of these numbers also makes the index applicable even if the abstracts are transcribed or cut out and pasted on cards. A **number** before the dash will indicate that it is a Current Abstract and the issue in which it appears. A **letter** before the dash indicates that it is in a Special Cumulative Bibliography and the exact bibliography in which it appears. Thus **1-1** indicates the first item in the Current Abstracts section of Vol. 1, No. 1, Jan. 1950. **2-2** the second item in Vol. 1, No. 2, Feb. 1950, etc., whereas, **A-1** indicates that the item is in the Special Bibliography on Atmospheric Pollution which appears in Vol. 1, No. 1, and B-1 would indicate that the item is the first one in the Cumulative Bibliography appearing in the second issue of this journal.

Subject index: To avoid the necessity of making multiple entries where two or more subjects are involved in one article as the editors of the Royal Meteorological Society Bibliography and the Bibliographie Météorologique Internationale have done in the past, a subject index has been ap-

pended, and is made up for the most part from the **Subject Headings** printed at the end of eac abstract. **Geographic Place Names** have been included as separate Subject Headings rather that as subdivisions of some technical heading (for instance Climatology-Belgium, or Rainfall-Budapest but for the sake of logic and simplicity these Geographical Headings have been indexed separately

Author index: Personal authors including co-authors have been indexed alphabetically, withou mention of the title of each separate work, or reference to co-authorship. Where the author is nc easily determined, but a society, corporation or government agency is substituted for the autho the preferred form of entry for that organization will be listed in the Index of Corporate Autho following the Index of Personal Authors. At present no cross-references will be made even thoug the corporate authorship is highly complicated, as is usually the case with Government Agencie A Government Agency or State Institution usually by the way, is entered under the English nam for that Government.

Location of material: While it is physically impossible to give for each entry the name of ever library where that item might be obtained, it is possible, by using standard library symbols, to giv the reader some idea of where he might obtain such material. This is especially important if t article is from some obscure or foreign source. So in most instances a symbol taken from the list c symbols used by the Union List of Serials (Gregory), or the Union Catalogue of the Library c Congress will be given just before the text of each abstract. In some cases where no symbol ha been assigned to a library, one will be invented by using the general principle of the Union Catalogu list. As a rule the library indicated will be in the District of Columbia, with an occasional referenc to one in New York or Boston. It will be noted that D stands for District of Columbia, M fc Massachusetts and N for New York. Thus **DWB** stands for the U. S. Weather Bureau Library i Washington, D. C., and **MH–BH** for the Blue Hill branch of the Harvard Library in Boston, Mas In the latter case, since the Blue Hill Observatory contains not only the Harvard Observator Library but that of the American Meteorological Society, the same symbol (MH–BH) will stand fc either or both libraries. When rare material has just come into the hands of the American Meteo ological Society, Bibliography staff which is located in Washington, D. C., the symbol DAMS wi be given followed by **MH–BH** indicating that the material will later be deposited in the Societ Library at Blue Hill. A complete list of the symbols used in each issue will appear in the Explana tions immediately preceeding the section on Current Abstracts.

EXPLANATIONS

Library Symbols: The following abbreviations have been used for Libraries in which the specif material thus indicated in this issue is located:

DA:	U. S. Department of Agriculture Library, Washington, D. C.
●DAMS:	Material in hands of American Meteorological Society Abstracts, P.O. Box 173 Washington 13, D. C.
●DAWS:	Air Weather Service, Technical Information Files, Andrews Air Base, Washingto 25, D. C.
DBS:	U. S. Bureau of Standards Library, Washington, D. C.
DGS:	U. S. Geological Survey Library, Washington, D. C.
DLC:	Library of Congress, Washington, D. C.
DM:	U. S. Bureau of Mines Library, Washington, D. C.
●DPL:	U. S. Department of Defense, (Pentagon) Library, Washington, D. C.
DSG:	U. S. Army Medical Library, Washington, D. C.
DWB:	U. S. Weather Bureau Library, Washington, D. C.
MH–BH:	Harvard University, Blue Hill Observatory (and American Meteorological Society Library, Milton, Mass.

● = unauthorized symbols; other symbols are used in Union List of Serials (Gregory).

Abbreviations and other symbols:

Titles of periodicals are not abbreviated as a rule. Other abbreviations will be used sparingl and only when the abbreviation is obvious.

The months of the year from March through July are not abbreviated. Other months a abbreviated as Jan., Feb., Aug., Sept., Oct., Nov., and Dec., respectively.

The word or abbreviation for Volume, (Tom, Band, Jahrgang, Año, etc.) and for Numb (Heft, Fascicule, Vypusk) and page or pages is omitted from most entries. Thus an entry will rea as follows:

Meteorologische Rundschau 2(5/6):146–151, May/June 1949.

This indicates that the article was in the Meteorologische Rundschau, Jahrgang 2 (Vol. 2 Heft 5/6 (No. 5 and 6), pages 146–151, Mai/Juni 1949.

The Symbol * before an entry indicates a good data source.

The Symbol† before an entry indicates a good bibliography source.

eographical (place) names are in the form generally used internationally, rather than in the form ed locally. For instance Vienna is used instead of Wien, Florence for Firenza, Moscow for Moskva d Germany for Deutschland.

tles of articles or monographs are in the language of the original article unless otherwise stated. avic (Cyrillic) titles are transliterated according to the Library of Congress transliteration scheme, to the Roman Alphabet.

ntries for **titles of periodicals** are given in the form used on the title page of the periodical providing e title is distinctive (Monthly Weather Review, Meteorologiské Zprávy, and Revista Meteorgica). If the journal is the official organ of a society or institution and the title is not distinctive, is the case with Transactions, Bulletins, Proceedings, Comptes Rendus, Trudy, Izvestiia, Sitzungsrichte, Verhandelingen, Miscellanées, etc., the preferred name of the organization is given first, part of the title (American Geophysical Union, Transactions; Royal Society of London, Proedings).

LIST OF PERIODICALS AND BIBLIOGRAPHIES

Note: In this list the preferred form of title for entry is given in bold face type. If the title is distinctive, the name and headquarters of the issuing society or organization follows the title. If the title is not distinctive the issuing organization precedes and is part of the title.

ERIODICALS IN WHICH METEOROLOGICAL ARTICLES REGULARLY APPEAR

ademiia Nauk, SSSR, Izvestiia, Ser. Geogr. i Geofiz., [Moscow].
nerican Geophysical Union, Transactions, National Research Council, Washington.
merican Meteorological Society, Bulletin, [Boston].
nnalen der Meteorologie, Meteorologische Amtes für Nordwestdeutschland, Hamburg, [British Zone, Germany].
nali di Geofisica, Istituto Nazionale di Geofisica, [Rome].
el et Terre, Société Belge d'Astronomie, de Météorologie et de Physique du Globe. Uccle-Bruxelles.
ofisica Pura e Applicata, Istituto Geofisica Italiano, [Milan].
ophysical Magazine, [Central Meteorological Observatory, Toyko].
mel en Dampkring, Nederlandse Vereniging voor Weer- en Sterrenkunde, [The Hague].
drológiai Közlöny, [Hydrological Section of the Hungarian Geological Society, Budapest].
döjárás, Az Országos Meteorológiai és Földmágnességi Intézet, [Budapest].
urnal of Geophysical Research (formerly Terrestrial Magnetism and Atmospheric Electricity), [Washington].
ournal of Meteorology, American Meteorological Society, [Boston].
ournal Scientifique de la Météorologie, Société Météorologique de France, [Paris].
he Marine Observer, Air Ministry, Meteorological Office, London.
he Meteorological Magazine, Air Ministry, Meteorological Office, [**London**].
e Meteorological Magazine, Meteorological Society of China, [**Nanking**].
Ieteorological Society of Japan, Journal, Second Series, Kisho Shushi, [Tokyo].
Ieteorologické Zprávy, Státní Meteorologický ústav v Praze, [Prague].
a Météorologie, Société Météorologique de France, [Paris].
Ieteorologische Rundschau, Bad-Kissingen, [U. S. Zone, Germany].
Ionthly Weather Review, U. S. Weather Bureau, Washington, D. C.
Iimbus, Sociedad Meteorológica de Bolivia, [La Paz].
lar Forschung, Archiv für Polarforschung in Kiel, [Kiel, British Zone, Germany].
evista Meteorológica, Junta Nacional de Meteorología, Montevideo.
ivista di Meteorologia Aeronautica, Associazione Culturale Aeronautica, [Rome].
oyal Meteorological Society, Quarterly Journal, [London].
e Royal Society of London, Proceedings, Series A, Mathematical and Physical Sciences, [London].
ellus, Svenska Geofysiska Föreningen, Stockholm.
esoiuznoe Geograficheskoe Obshchestvo, SSSR, Izvestiia, [Moscow-Leningrad].
Veather, Royal Meteorological Society, [London].
Veatherwise, Amateur Weathermen of America, Philadelphia.

★**Wetter und Klima,** Deutscher Meteorologischer Dienste im Französischen Besatzun gebiet, Seelbach b. Lahr/Baden, [French Zone, Germany].
★**Wetter und Leben,** Österreichischer Gesellschaft für Meteorologie, [Vienna].
Wiadomości Służby, Państwowy Instytut Hydrologiczno-Meteorologiczny, [Warsaw].
★**Zeitschrift für Meteorologie,** Meteorologisches Observatorium, Potsdam, [U. S. S. R. Zo Germany].

PERIODICALS REGULARLY CONTAINING METEOROLOGICAL BIBLIOGRAPHIES OR ABSTRACTS

Applied Mechanics Reviews, American Society of Mechanical Engineers, Easton, Pa.
Bibliographie Météorologique Internationale, Société Météorologique de France et Météorolo Nationale, Paris.
Bibliographie Meteorologique Suisse, Station Centrale Suisse de Meteorologie, Zürich, Swit land.
Bibliography of Meteorological Literature, Royal Meteorological Society, London.
Biological Abstracts, Union of American Biological Societies, Ann Arbor, Michigan.
Physics Abstracts, (Section A. of Science Abstracts), Institution of Electrical Engine London.

★ Indicates those periodicals which are primarily meteorological and which will be analy in full as soon as possible after receipt.

PART I. ABSTRACTS OF CURRENT METEOROLOGICAL MATERIAL

REVIEW OF THIRTY CURRENT METEOROLOGICAL OR GEOPHYSICAL PERIODICALS

Note: In answer to a questionnaire sent to the editors of thirty-five of the world's outstanding periodicals devoted in whole or part to the publication of meteorological articles, asking for the latest and most accurate information on the nature, contents and history of each respective journal, replies were received from over thirty, including the following. It should be noted that information on irregular serials (as for instance the excellent **Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A.,** and **Ser. B.**) are not included in this review, but will be taken up as a class in an early issue. Furthermore several journals such as **Meteorological Magazine** (**Nanking**), **Meteorological Society of Japan, Journal,** and **Geophysica,** (**Helsinki**), whose present status is uncertain, have been withheld for discussion in the next issue where the many excellent publications now discontinued will be considered in detail. Likewise a copy of the new periodical **Nimbus,** Organo de la Sociedad Meteorologica de Bolivia, edited by Prof. Ismael Escobar, V, with the first number under the date of Jan.-March (presumably 1949) was received too late for inclusion in the body of this section, so it will be discussed later in more detail.

1–1 550.3(05)

Akademiia Nauk SSSR, Izvestiia, Seriia Geograficheskaia i Geofizicheskaia, [Academy Science, U.S.S.R., Izvestiia, Geographical and Geophysical Series]. Published by latel'stvo Akademii Nauk SSSR, [Moscow]. Editor: O. IU. Shmidt, Moscow 17, Piatnitia ul. 48. The first volume appeared in 1937 at the instigation of the well-known scientists: V. Shuleikin, E. E. Fedorov, P. N. Tverskoe and the present editor, O. IU. Shmidt. Each ue of this series contains about 100 pages of original papers, critical reviews and bibliraphies on: (a) physical geography, (b) physics of the atmosphere, (c) physics of the sea, (d) ysics of the earth's crust, and (e) mathematical geophysics. The contents of each issue conveniently divided into four or five sections corresponding to the above categories. The rnal appears bi-monthly, the most recent issue coming to our attention being Vol. XIII, . 5, Sept.–Oct. 1949. Price 9 rubles per issue. Size 17x26 cm. Each paper, which has n presented to the Academy by some member, contains a brief abstract, is well annotated, l is supported by ample charts, diagrams, tables, mathematical formulae and sufficient erences to enable the reader to evaluate the works, both native and foreign, on which the per was based. Articles are all in Russian and printing, except for references to foreign blications, and chemical and mathematical formulae, is in Cyrillic. In the Library of ngress will be found many publications of the Akademiia Nauk (formerly the Academiae entiarum Imperialis Petropolitanae, founded 1725 in St. Petersburg) dating back to 1778. ne of these, notably the Acta, the Nova Acta, Memoires, Zapiski, Comptes Rendus, and klady, contain excellent meteorological and climatological papers. **DLC, DWB, DGS, DPL.**

1–2 550.3(02)

American Geophysical Union, Transactions [Washington]. Published by the National search Council of the National Academy of Sciences, Washington 5, D. C. Photo-offset roduction. 17x24 cm. Price $7.50 per year to non-members. Vol. 1–9, (1920–1928) peared in the Bulletin of the National Research Council. Publication irregular from 1929–4 comprising 1 to 6 parts each year. Since 1945 the Transactions have appeared regularly ry two months, with original papers and bibliographies in all of the branches of geophysics: eorology, hydrology, oceanography, seismology, vulcanology, geodesy, terrestrial magnet, atmospheric electricity and tectonophysics. The journal maintained a high scientific

reputation under the editorship of John A. Fleming from 1924 to 1944. Since then, quality of the publication has improved under the guidance of Waldo E. Smith, the Execu Secretary and various editors. The Transactions are the means of publishing society busin lists of members, notices of meetings and papers read at society meetings, all in the Eng language. Publication is prompt and illustrative material good within the limitations of method of reproduction. **DWB, MH-BH.**

1–3 551.5

American Meteorological Society, Bulletin [Boston]. Editor: Robert G. Stone, Rou Box 451, Clinton, Md. Published 10 times yearly by the Lancaster Press, Lancaster, Office of Executive Secretary, 5 Joy Street, Boston 8, Mass. Price $6.00 a year. 400 p. volume. 19x26 cm., illustrated. All articles in English. The American Meteorolog Journal (1884–1896) was allowed to lapse at the beginning of the century and for a scor years the Monthly Weather Review was the only American journal devoted purely to met ology with the exception of Tycos-Rochester, a popular trade journal published by Taylor Instrument Co. (1910–1942). After the first World War, the need for both a met ological society and a journal which was not restricted by the fiscal and ideological limitat of an official government publication, became evident. Dr. C. F. Brooks, who had been energetic and resourceful young editor of the Monthly Weather Review from 1917–1 sparked the formation of the new society which was officially organized on Dec. 29, 1919, assumed editorship of the new journal in connection with his duties as secretary of the Socie the position he has held to this date. Since 1936, the present editor, Robert G. Stone assumed more and more responsibility for the content of the Bulletin. The early issues devoted mainly to society business, abstracts and reviews, with an increasing number of it of popular or semi-scientific interest. Longer theoretical articles, were not, however, negle and the Bulletin, known throughout the world as BAMS, has been the outlet for a numbe first class contributions to meteorological science, such as the series of papers on Isentr Analysis by Namias, etc. For a few years the Bulletin was reprinted in a Spanish editio the benefit of the many Latin American members, and it gave impetus to the foundatio the Revista Meteorologica (Montevideo) to better serve the meteorologists of South Ame During the last war it became evident that the Bulletin could not print all the scientific art that were being written by the ever-increasing number of professional meteorologist America, so the Journal of Meteorology was established by the professional members of Society under the guidance of Dr. Rossby and his apostles at the University of Chicago, York University, M. I. T., etc. This new journal, however, did not in any way reduce quality of the articles printed in the Bulletin, which latter is still unable to handle all of scientific articles sent to it for publication. Bibliographies and abstracts were publi regularly in the Bulletin from 1942 through 1948. Beginning with Vol. 30, Jan. 1949, Bulletin was enlarged and the format changed. **DLC, DWB.**

1–4 551.5

[Germany, British Zone], Meteorologische Amt für Nordwestdeutschland, **Annalen Meteorologie.** [Hamburg]. Editor: Georg Pogade, assisted by Dr. W. Dammann Dr. M. Rodewald, Hamburg, Bernhard-Nocht-Str. 76, Germany (British Zone). An price: 20 DM for 12 issues. Size 19x27 cm. 360 p. per volume. Vol. 1, No. 1, Jan. 1 Vol. 2, (3/4), March–April 1949. This journal is a successor to the meteorological part o well-known "Annalen der Hydrographie und Maritimen Meteorologie" (1872–1944). It prises about 300 pages a year of original articles and bibliographies in meteorology, sync and dynamic meteorology and statistical climatology. In 1948 the journal was issued mont but during 1949 it has appeared bi-monthly. Recent issues have contained well-illustr and annotated contributions by Dr. Hellmut Berg, Dr. Rodewald, Gerhard Schindler, Schmauss, Hermann Flohn, Dr. Franz Baur, Rudolf Penndorf, Prof. Georgi, W. Haude Koppe, Paul Raethjen, Heinrich Seilkopf, Heinz Wichmann, Eberhard Wahl, and other known writers in the British, French and American Zones of Germany. Articles are a German with long summaries in German and English. Each number contains a tab climatic data for Northwest Germany for a previous month. **DWB, MH-BH.**

1–5 550.3(05)

Istituto Nazionale di Geofisica, Roma, **Annali di Geofisica.** Edited by Prof. Pietro Caloi, Citta Universitaria-Rome, Italy. A quarterly journal devoted to fundamental original articles in the field of geophysics, seismology, geodesy, meteorology, hydrology, astrophysics, terrestrial magnetism, vulcanism, etc. Articles are all in Italian with brief summaries. Notices, reviews and bibliographies are also included. The first number of Vol. I appeared in Jan. 1948. Vol. I, No. 3, dated July 1949 has been received by the American Meteorological Society, so the journal appears to be continuing in spite of the untimely death of its founder, Antonio lo Surdo on June 7, 1949. Prof. lo Surdo had been a prolific writer of scientific papers in all branches of geophysics since 1904 and was director of the Institute since 1937. 650 p. per volume, illustrated. 18x25 cm. **DWB, DLC, MH-BH.**

1–6 52(05)

Société Belge d'Astronomie, de Météorologie et de Physique du Globe. **Ciel et Terre** [Uccle-Brussels]. Edited by P. Bourgeois, director of the Observatoire Royal de Belgique. Now in its 65th year, this little monthly publication (founded in 1881) has been continuous and in its pages have appeared a number of important original articles in the field of meteorology and astrophysics, although most of the material is on astronomy. The publication also contains society business, notices, reviews and tabular data on astronomy and sun-spots. Contains illustrations. Articles all in French. Price 30 fr. Latest issue Vol. 65, No. 9, Sept. 1949. **DLC, DWB.**

1–7 550.3(05)

Istituto Geofisico Italiano, Milano. **Geofisica Pura e Applicata.** Editor: Prof. Mario Possolasco. Quarterly or bi-monthly journal of about 300 pages per year, 17x24 cm., devoted to geophysics including meteorology and hydrology. Contains original articles of high quality, short contributions, reviews, abstracts and bibliographies. Vol. I, No. 1, appeared in April 1939 and the latest issue received is Vol. XIV, No. 3/4, July 1949. Contributions are in Italian, German, French or English, and each article is accompanied by a summary in two or three of these languages. Profusely illustrated with excellent figures and charts. **DWB, MH-BH.**

1–8 550.3(05)

[Japan], Central Meteorological Observatory, **Geophysical Magazine** [Tokyo]. Editor: S. Sakuraba, Central Meteorological Observatory, (Ote-machi, Chiyoda-ku) Tokyo, Japan. Vol. I, No. 1, appeared in July 1926 and Vol. XXI, No. 1, in May, 1949. Publication interrupted at end of war. Consists of about 300 pages per volume, 26x18 cm. **DWB, MH-BH.**

1–9 52(05)551.5

Nederlandse Vereniging voor Weer-en Sterrenkunde [Dutch Meteorological and Astronomical Society], **Hemel en Dampkring,** [Sky and atmosphere]. [The Hague]. Editor: Dr. Jean J. Raimond, Jr., Wagenstraat 37, The Hague, Netherlands. Printed by J. B. Wolters, Gr. V. Groningen. First issue appeared in Jan. 1903. Vol. 47, No. 9, Sept. 1949 latest received. 400 pages per volume, 16x24 cm. Price for 11 issues, 14.50*f*, abroad. Contains original articles, short contributions, and popular reviews on astronomy and meteorology in Dutch. About 35% of the contents are devoted to popular but scientific articles on weather situations in the Netherlands, new meteorological theories and methods, investigations on tropical cyclones, etc., contributed by members of the staff of the Netherlands Meteorological Institute and the KLM Airlines. A new series of monographs "Wetenschappelijle Supplement op Hemel en Dampkring" contains the results of scientific meteorological investigations in Holland. Two issues of this supplement have appeared (one in 1948 and one in 1949). **DLC.**

1–10 551.5(05)

[Hungary], A Magyar Meteorológiai társaság és Az Országos Meteorológiai és Földmágnességi intézet, [Hungarian Meteorological Institute and Hungarian Meteorological Society]. **Idöjárás,** [The weather]. [Budapest]. Editor: L. Aujeszky, Kitaibel Pál-Utca 1, Budapest II. Vol. 1, No. 1, appeared in July 1897 and the publication has been continuous to Vol. 53, No. 7–8, July–Aug. 1949. Consists of original articles, short contributions,

reviews, abstracts, and bibliographies in meteorology and terrestrial magnetism. Fo
by E. Héjjas in 1897 and later edited by Z. Róna and Prof. A. Réthly. Articles all in Hun
but there is appended a section containing English summaries of most of the articles.
pages per volume, 17x24 cm., price for 6 issues $1.50. Bi-monthly. **DLC, DWB, MH**

1–11 550

Journal of Geophysical Research, [Washington]. Continuation of Terrestrial Magn
and Atmospheric Electricity (1896–1948). Editor Dr. Merle A. Tuve, Carnegie Ins
5241 Broad Branch Road, N. W., Washington 15, D. C. Published by Johns Hopkins
Baltimore 18, Md. First Issue V. 54, No. 1, March 1949. Latest issue 54(3) Sept.
Price $3.50 per year. Terrestrial Magnetism and Atmospheric Electricity has for
century been the world's outstanding journal devoted principally to the field of terr
magnetism and the aurora. The change in format and title effects to only a minor
the type and quality of material published. It will be possible, however, to include
material in the fields of geodesy, meteorology of the higher atmosphere and works in r
fields of geophysics than could have been possible under the old title. Interesting featu
the old and the new journal have been the bibliographies classified under major fields o
physics, logs of auroras and magnetic data made in various parts of the earth, etc. All a
in the past have been in English. **DLC, DWB, DGS, DPL.**

1–12 551

American Meteorological Society, **Journal of Meteorology,** [Boston]. Printed b
Lancaster Press, Lancaster, Pa. Editor, George W. Platzman. (Beginning January
Werner A. Baum). Bi-monthly, 380 p. per volume, 22x28 cm., price (for 6 issues) $8.
year. The Journal of Meteorology was established in 1944 by C. G. Rossby as an outl
the increasing number of technical papers in the field of synoptic and dynamic meteo
written in English. Under the editorship of Victor P. Starr, R. B. Montgomery, and G
W. Platzman, the Journal has included many important original theoretical articles
number of classical papers in the realm of applied meteorology. **DLC, DWB, DPL.**

1–13 551

Société Météorologique de France. [Paris]. **Journal Scientifique de la Météor**
Edited by the Société Météorologique de France, 1 Quai Branly, Paris 7e France.
quarterly journal instigated by A. Viaut, and devoted to original articles on synopt
dynamic meteorology, with emphasis on the theoretical aspects. Text entirely in F
but each article is summarized in English and Spanish as well as French. Vol. 1, No. 1,
March 1949. Two numbers have been received thus far. 120 p. per volume, 18x27 cm
per year abroad. **DWB, MH-BH.**

1–14 551

Great Britain, Air Ministry, Meteorological Office. [London]. **The Marine Obs**
Editor: The Marine Superintendent, Meteorological Office, Headstone Drive, Harrow, M
sex, England. Published by H. M. Stationery Office, London. 340 p. per volume, 15.
cm. Price £1 per ann. This publication is a continuation of articles printed on ba
"Monthly Pilot and Meteorological Charts" (1901–1923) for the benefit of naval and me
seamen interested in or cooperating with the Meteorological Service. Published m
from 1924–1932 incl., and quarterly from 1933–1949 except from Oct. 1939 to July 1947
publication was suspended due to the war. Material comprises illustrated popula
original articles and short contributions in maritime meteorology and oceanography.
MH-BH.

1–15 551

Great Britain, Air Ministry, Meteorological Office. **Meteorological Magazine.**
don]. Editor Mr. G. A. Bull, Meteorological Office (M.O. 20) Headstone Drive, H
Middlesex, England. Printed by H. M. Stationery Office, London. 360 p. per v
15x24 cm. Price 12 s. per year. ($3.50 per year in America). First issue Vol. 55, N
Feb. 1920. Latest issue received Vol. 78, No. 928, Oct. 1949. A semi-popular m
magazine devoted to original articles, reviews and abstracts in meteorology and peri

eophysical sciences, the **Meteorological Magazine** is the oldest continuous monthly publication f this type. In Feb. 1920, the Meteorological Office took over publication of **Symons's Meteorological Magazine** which began in 1866 and continued without interruption through an. 1920. Among the outstanding editors have been F. J. W. Whipple, and C. E. P. Brooks, hile contributors to its pages comprise almost every eminent meteorologist of the last century. n interesting feature has been publication of monthly summaries, climatic data and anomalies or the British Empire and America, and hundreds of small items of meteorological interest ontributed by observers all over the world, often with charts, drawings or illustrations—the aw material from which experienced meteorologists gain perspective and sound judgment in oth theoretical and applied meteorology and climatology. **DWB, MH-BH, DLC.**

1–16 551.5(05)

[Czechoslovakia]. Státní Meteorolozický Ústav v praze a Štátny Meteorolozický ústav Bratislave. **Meteorologické Zprávy** [Prague]. Bulletin Météorologique. Editors: Dr. lois Gregor, Holečkova 8, Praze XVI Smíchov, and Dr. Mikuláš Konček, Bratislava. This i-monthly publication, first issued in the spring of 1947, is now in its third year and appears o be an outstanding journal for agricultural meteorology, climatology, hydrometeorology and ynoptic meteorology. The quality of the paper, printing, binding, plates, tables and charts nows evidence of careful editing. All articles are in Czech but the table of contents is given n both French and Czech. Illustrative material and tabular data are nearly self-explanatory. ach number contains a few original articles by Dr. Gregor, Konček, Ing. Oto Dub, and others; eports on conferences, reviews, summaries, and data of synoptic or agro-climatic conditions, escriptions and photographs of instruments. In addition there are excellent photographs of ouds and other weather phenomena and precipitation charts, which are not bound with the st of the journal, making it possible to bind them separately. 200 p. per volume, 21x30 cm. rice 72 Kčs. per year, or 12 Kčs. per issue. Latest issue Ročník III, Číslo 2. Sprnu [August] 949. **DWB.**

1–17 551.5(05)

Société Météorologique de France. **La Météorologie.** [Paris]. Editor A. Viaut, ociété Météorologique de France, 1 Quai Branly, Paris 7e France. A continuation of the **nnuaire de la Société Météorologique de France** (1849–1924), **La Météorologie** is now a uarterly journal devoted to meteorology and geophysics, theoretical and applied. Ser. I, o. 1 appeared in Jan. 1925. Latest issue Ser. 4, No. 14, Apr.–June 1949. 250 p. per volume, 3x27 cm. Price in France 500*f* per ann. (750*f* abroad). Publication contains society business, orrespondence, reviews and some long original articles of lasting value in French with English mmaries in recent issues. Well illustrated with excellent photographic plates, graphs, arts and insert maps. **DLC, DWB, MH-BH.**

1–18 551.5(05)

Meteorologische Rundschau [Bad Kissingen]. Edited by Dr. Karl Keil, Reichshof, ostfach 10, Bad-Kissingen, Germany; U. S. Zone. Published by Springer-Verlag, Heidel-rg/Berlin. 400 p. per volume, 29x20½ cm. Price 60 d.m. per year. Bi-monthly articles l in German—summaries in German and English. One of the few first-class scientific blications devoted entirely to meteorology, the **Meteorologische Rundschau** contains many iginal contributions by such well-known authors as Lettau, Flohn, Knoch, etc. . . . Con-ibutions are not limited to writers in the U. S. Zone. The first issue appeared as Vol. 1, o. 1/2, July/Aug. 1947, and Vol. 1 continued through that and the following year (No. 15/16, ov./Dec. 1948). Besides articles on synoptic and dynamic meteorology and climatology ch issue contains several pages of reviews, abstracts, and lists of publications received in the brary of the Deutscher Wetterdienste in der U. S. Zone, of which Dr. Karl Keil is Chief brarian. **DWB, DLC, MH-BH.**

1–19 551.5(05)

U. S. Weather Bureau, **Monthly Weather Review,** [Washington]. Editor: James E. askey, Jr., U. S. Weather Bureau, 24th and M Sts., N. W., Washington 25, D. C. 400 p. r volume, 23x29 cm. Published by U. S. Government Printing Office, Washington 25, D. C.

Annual price $2.00 in U. S. A., $2.75 abroad. Illustrated charts and diagrams in color. articles in English. First issued in Oct. 1872, volume I began with Jan. 1873 and publicati has been continuous to date. Most recent issue Vol. 77, No. 8, Aug. 1949. Due to changes fiscal policy, the quality of the publication has varied tremendously through the years. T review attained worldwide renown as a medium for meteorological articles under the directi of Prof. Cleveland Abbe, between 1873 and 1909. Then for a few years (1909–1912) the journ was doubled in size and included all of the data from several thousand climatic and hydrolog stations in the U. S. A. Other renowned editors were: F. H. Bigelow, P. C. Day, Clevela Abbe, Jr., H. H. Kimball, Charles F. Brooks, Alfred J. Henry and W. J. Humphreys. Ou standing contributors in the past included the above named editors as well as C. G. Abb A. Ångstrom, V. & J. Bjerknes, Edward Bowie, C. E. P. Brooks, H. R. Byers, H. H. Clayto Bernhard Haurwitz, Helmut Landsberg, Charles L. Mitchell, Sir Napier Shaw, H. U. Sverdru I. R. Tannehill, R. H. Weightman, Harry Wexler and Hurd C. Willett. Although ma important meteorological and climatological papers were published from 1893 to 1938, sin that time the greater part of the publication has been devoted to climatic charts and tabl and to summaries of weather conditions, and storms. Beginning with Jan. 1950 it is expect that more space will be devoted to original papers. **DWB, DLC, DA, MH-BH.**

1–20 551.5(0

Junta Nacional de Meteorología, **Revista Meteorológica.** [Montevideo]. Edito Prof. Luis Morandi, Cerrito 73, Montevideo, Uruguay. An illustrated quarterly journal f meteorological articles in the Spanish language, first published in Jan. 1942. It contai notices of meetings, reviews, personals, the official business of the Junta Nacional de Mete ologia, and in addition articles of varying length and quality written by scientists and g ographers in all countries of South America, with special attention to medical climatolog ecology, aerology, forecasting and borderline fields of geophysics. Most recent issue A [Vol.] VIII, No. 29, April 1949. Interesting articles by the late Walter Knoche, Jose Bergei Korff and others have been appearing during its 8 years of continuous publication. **DW MH-BH, DLC.**

1–21 551.5(0

Associazione Cultrale Aeronautica, **Rivista di Meteorologia Aeronautica.** [Rom Edited by: Prof. Raoul Bilancini, Servizio Meteorologico Per l'Aeronautica, Piazza del Popo 18, Roma. 96 p. per volume, 21.5x30 cm. Price 700 Liras (Local), 2,000 Liras (Foreign). quarterly journal devoted to original articles, short contributions and reviews in synoptic a dynamic meteorology. Publication was begun in July 1937 by the "Ministero del l'Aer nautica" with Prof. Fillippo Eredia as editor. The journal was intended as a medium f dissemination of studies connected with weather forecasting and protection to aviation, wi all articles published in Italian. Publication was suspended from the end of 1943 to t beginning of 1948. Prof. Bilancini succeeded Prof. Eredia upon the death of the latter 1947. **DLC, DWB, MH-BH.**

1–22 551.5(0

Royal Meteorological Society, Quarterly Journal. [London]. Published by the Roy Meteorological Society, 49 Cromwell Road, London S. W. 7, England. Editor: Dr. R. Sutcliffe, 20 Hollybush Lane, Harpenden, Herts. U. K. 450 p. per volume, 22x30 cm. Pri £2 per year. All articles are in English. Probably the best known and most consistent satisfactory publication in history devoted purely to meteorology. The first issue appeared Nov. 1871 and the most recent, Vol. 75, No. 326 in Oct. 1949. The present journal was continuation of **The Proceedings of the British Meteorological Society** (1861–1871) whi replaced the **Annual Reports of the British Meteorological Society.** The latter also contain many historic papers on meteorology written during the first 11 years (1850–1861) of t society's existence. Thus for almost 100 years there has been a continuous record of socie business meetings, symposia, and the research papers read at the meetings by Fellows a foreign members, together with the discussions thereof. Almost all of the eminent meteo ologists of the century have contributed to its pages, and many of the papers are classical. great deal of the virility of the society was due to its founders, especially to Sir James Glaish

the Secretary for many years (1850–1872), who edited and contributed many articles to the pages of the Quarterly Journal as well as to the Proceedings and the Annual Reports. **DLC, DWB, MH-BH.**

1–23 550.3(05)

Svenska Geofysiska Föreningen, **Tellus.** [Stockholm]. Editor Carl-Gustav Rossby. Institute of Meteorology, University of Stockholm, Fridhemsgatan 9, Stockholm 12, Sweden. Published by Generalstabens Litografiska Anstalt, Stockholm 1, Sweden. 260 p. per volume, 18x25 cm. Price 21 Sw. Kr. per year, $6.00 per year abroad. Vol. 1, No. 1, Feb. 1949. Vol. 1, No. 3, Aug. 1949, most recent issue received. Not content with fostering one high quality scientific journal; the "Journal of Meteorology," Prof. Rossby was the moving force and first editor of an even more scientific periodical "Tellus." Contributions, including short articles and reviews as well as long original papers, are printed in English, German or French and embrace the kindred sciences of oceanography, meteorology, mathematical geophysics and hydrology. Illustrations in two colors appeared in the first two issues. **DWB, MH-BH.**

1–24 551.5(05)

Vsesoiuznoe Geograficheskoe Obshchestvo, Izvestiia. [Moscow-Leningrad]. [All Union (USSR) Geographical Society, Bulletin]. Editors: L. S. Berg and S. V. Kalesnik, Leningrad Demidov, per., 8-a. Published by Izdatelstvo Akademii Nauk SSSR, (Moscow-Leningrad). Price 10 rubles 50 kopeks per issue. 600 p. per volume. The first volume of this series appeared in 1865 and up to 1918 it was published in Leningrad by the Imperial Russian Geographical Society. Several other series were begun by this Society in the years from 1849 to 1865 (**Vestnik, Zapiski, Zapiski Statistiki** and **Otchet**), some of them continuing on down to 1905 or 1910, and often containing important contributions to climatology, oceanography and other phases of scientific geography. The present series contains many articles on descriptive or historical climatology, reviews and bibliographies, some statistical data and a few sketches and illustrations. Articles are well edited and annotated. The most recent issue received has been Tom [Vol.] 81, Vypusk [No.] 4, Aug. 1949. **DLC, DWB, MH-BH.**

1–25 551.5(05)

Royal Meteorological Society, **Weather.** [London]. A monthly magazine for all interested in meteorology. Editors: O. M. Ashford, A. R. Meetham, C. D. Ovey, J. S. Sawyer and F. L. Westwater, the Royal Meteorological Society, 49 Cromwell Rd., London, S. W. 7, England. The first issue of this attractive magazine came out in May 1946, since which time a copy has appeared on schedule each month through Oct. 1949 (Vol. 4, No. 10). **Weather** is the first publication since **"Tycos"** was discontinued in 1942, to include interesting photographs of clouds, snow scenes or other weather phenomena on the cover as well as in the form of illustrative plates accompanying popular articles. Other illustrations consist of aerological charts and diagrams, synoptic charts, automatic records, photographs of instruments, equipment and observational sites. Climatic data for the British Isles accompany a summary of the weather for the preceding month, and the publication is received, even in America, before interest in this material has grown cold. The magazine is pocket size (23½x15½ cm.) with about 400 pages to a volume. Considering the varying colors and photographs on the cover, the price (18 s. per year) is very reasonable. **DWB, MH-BH, DLC.**

1–26 551.5(05)

Amateur Weathermen of America, **Weatherwise.** [Philadelphia]. Editor: Charles A. Federer, Jr., 24 Edward St., Belmont 78, Mass. Director: David M. Ludlum, Franklin Institute, Philadelphia 3, Pa. 150 p. per volume, 16x25 cm., annual price $3.00 (local), $3.50 (Canada) and $4.00 (foreign) for 6 issues. First issue (Vol. 1, No. 1) Feb. 1948. Latest issue received (Vol. 2, No. 5) Oct. 1949. To fill a growing demand for a popular journal for amateurs, cooperative observers, fliers and science teachers, similar to the popular **"Tycos"** (Rochester) which was published from 1910 to 1942, the Amateur Weatherman of America publish this journal which is the American counterpart of **Weather.** It contains many news items of interest to all meteorologists, professional or amateur, and in addition instructive or popular articles on synoptic meteorology or even on more technical aspects of the science, written by

authorities in the respective fields. Reproductions of photographs, charts, diagrams, etc are excellent. **DWB.**

1–27 551.5(05

[Germany], Deutscher Meteorologischer Dienste im Französischen Besatzungsgebiet **Wetter und Klima,** monatsschrift für Meteorologie. [Monthly journal for applied meteorology]. Editor: Prof. Dr. W. Peppler, (17b) Seelbach b. Lahr/Baden. Publisher: Karl H Haug Verlag, Berlin-Tubingen-Saulgau. Vol. 1, No. 1, Jan. 1948. Bi-monthly, 400 p. pe volume, 15x21 cm. Each issue of this pocket size journal contains several original articles o micrometeorology, bioclimatology, hydrometeorology, synoptic meteorology, and other field of practical meteorology. In addition there are a few pages of personalia, reviews, and bibli ographies, weather summaries and monthly climatic data for the French Zone of Germany. **DLC, DWB, MH-BH.**

1–28 551.5(05

[Austria], Österreichischen Gesellschaft für Meteorologie, Bioklimatische Sektion **Wetter und Leben,** Zeitschrift für Bioklimatologie. Editor: Dr. Franz Sauberer, Hohe Wart 38, Vienna XIX, [Austria]. Publisher: F. Berger, Horn, N. Öst, [Austria]. First issue in April 1948, this little journal has gone through two volumes. Contains articles, reviews abstracts and bibliographies in the field of micro- and bioclimatology, hydrometeorology an other fields of applied meteorology or climatology in the same vein, though not on as broad scale as the now discontinued **Bioklimatischer Beiblätter der Meteorologischen Zeitschrif** (1933–1943). Size 17x24 cm. 250 p. per volume (6 issues). Price 34*f* in Austria, $3.40 pe year abroad. **DWB, MH-BH.**

1–29 551.5(05

[Poland], Państwowy Instytut Hydrologiczno-Meteorologiczny, **Wiadomości Służby** (Bulletin du Service Hydrologique et Météorologique). Editor: Dr. Ing. J. Matusewicz Oleandrow 6, Warsaw, Poland. 160 p. per volume, 21x30 cm. First issue: Tom I, Fasc. 1 1947. Each issue of this twice-yearly publication contains articles about the meteorologica or hydrological services in Poland, and original contributions on climatology and hydrolog accompanied by data and charts. The publication is more along the lines of an engineerin journal than most publications of meteorological services. Considerable river, runoff an rainfall data are included, although material on temperature and cloudiness, sunshine, etc is not wanting. **MH-BH.**

1–30 551.5(05

Zeitschrift für Meteorologie. [Potsdam]. Edited by Prof. Dr. R. Süring, Meteoro logisches Zentral Observatorium, (2) Potsdam [Germany, Soviet Zone], Deutscher Zentral verlag GMBH. 360 p. per volume, 22x29 cm. Price 48 DM per ann. First issue (Vol. 1 No. 1), Oct. 1946. 15 issues to Vol. 1. Latest issue (Vol. 3, No. 7), July 1949. A successo to the **Meteorologische Zeitschrift** (1884–1944) which was successor to the **Zeitschrift de Österreichischen Gesellschaft für Meteorologie** (1866–1885). A monthly (sometimes months are combined) publication devoted to original treatises, short contributions, notes reviews, and tabular data on meteorology, aerology, climatology, bioclimatology, geophysics and hydrology; personals: deaths, meetings conferences; synoptic, climatological, solar an magnetic notes, climatic and aerological data for Soviet Zone of Germany; bibliography an reviews. **DLC, DWB, MH-BH.**

GENERAL METEOROLOGY 551.5

1–31 551.5(03

Baum, Werner A., **Russian-English dictionary of meteorological terms and expressions** Hobart Publishing Co., Washington, D. C., June 1949. 126 p. **DWB**—As a result of severa years experience in translating meteorological literature from Russian into English, the autho was able to compile a list of over six thousand Russian words or phrases and their equivalent in idiomatic English as used by meteorologists. The work embraces the entire field of synopti and dynamic meteorology together with a few basic terms in the related fields of oceanography

hydrology, hydrodynamics, mathematics and physics. Previous works of this type, such as Bergeron's **Sechssprachiges Meteorologisches Wörterbuch** (1939) or the U. S. Weather Bureau's **"Russian-English Dictionary of Meteorological and Related Terms,"** do not cover the field nearly as thoroughly or accurately as the present work. *Subject Headings*: **Glossaries, Russian language.**

1–32 551.5(042)

Van Mieghem, Jacques, **La météorologie moderne.** [Modern meteorology]. Four lectures given over the radio at the Institut National Belge de Radio-diffusion. Jan. 1948. Ciel et Terre, 65(6):171–177, June 1949. **DWB**—History and development of meteorology. Necessity for services and causes of inaccurate forecasts. *Subject Headings*: **Meteorology, Addresses and lectures.**

1–33 551.5:92

Humphreys, William Jackson, **Of me.** Washington, D. C., 1947. 375 p., 19 plates, numerous refs. **DLC, DWB**—A very readable narrative by one of the best known modern meteorologists—describing his ancestry, childhood in West Virginia, college days in Virginia, teaching career and finally his 30-odd years as Meteorological Physicist of the U. S. Weather Bureau (1905–1935) including his trips to Sumatra, the Orient, to Europe, etc. This account gives not only his own biography, but great insight into the development and politics of the U. S. Weather Bureau, the Mount Weather Observatory, and Meteorology in America. Over 90 pages are devoted to a chronological list of the weekly scientific lectures of the Cosmos Club from 1929 through 1946, and 25 pages to the scientific papers prepared and published by the author between 1895 and 1947, including 15 books, (some popular) on various phases of the weather. Dr. Humphreys places his own evaluation on 50 of the 250 papers listed as being important original contributions, and 11 as very important contributions. *Subject Headings:* **Meteorology, Biography.**

1–34 551.5(09)

Khrgian, A. Kh., **Ocherki razvitiia meteorologii.** [Notes on the development of meteorology]. Gidromet. Izdat. Leningrad, 1948. 352 p., 37 fig., 8 tables, 94 refs., appendix. **DLC**—History of science, instrumentation, climatology, theoretical meteorology in 17th and 18th centuries, first observations, formation or organization of meteorology institutes, development of weather services, study of cyclones and anticyclones, modern climatology, study of the upper atmosphere, air-mass and frontal analysis, long range forecasting, general circulation, dynamic meteorology, actinometry, atmospheric optics, recent development. *Subject Headings:* **Meteorology, History.**

1–35 551.5(02):551.586

Neuberger, Hans Hermann, and Stephens, F. Briscoe, **Weather and man.** Prentice-Hall, Inc., New York, 1948. 272 p., 87 figs., 7 tables, refs. **DWB**—A semi-popular book for non-technical or high-school students. First part discusses the atmosphere, weather elements, air masses, fronts, atmospheric circulation, storms, climate, the U. S. Weather Bureau and amateur weather forecasting. The second part consists of chapters on weather and health, agriculture, architecture, aviation, shipping, transportation, public utilities, the housewife, business and industry. *Subject Headings:* **Meteorology, Bioclimatology, Textbooks.**

METEOROLOGICAL OBSERVATIONS AND INSTRUMENTS

1–36 551.501:551.58

Brooks, Charles F., **The climatic record: its content, limitations, and geographic value.** Association of American Geographers, Annals 38(3):153–168, Sept. 1948. 2 tables, 31 refs. **DWB**—Presidential address delivered before the Association in Charlottesville, Va., Dec. 29, 1947. Historical notes, recommendations of the IMO, difficulties in exposure, accuracy of records, a real coverage of world, geographic value and new techniques as applied to climatology. *Subject Headings:* **Observations, Climatology.**

1–37 551.501.7:551.506.

Frankenberger, Ernst, **Bericht über zwei Reisen im Polarjahr 1932–1933.** [Report o two expeditions in the Polar Year 1932–1933] and **Über Radiosonden-Aufstiege von Passa gierschiffen** [Radiosonde ascents from passenger ships]. Aus dem Archiv der Deutsche Seewarte und des Marineobservatoriums. 63(1), Hamburg, 1943. 58 p., figs., tables. **DLC DWB, DAWS**—Part I. of section A consists of an account of an expedition with A. Wigan to Spitsbergen in August, 1932, with the results of surface, pibal and radiosonde observations Part II describes a cruise in the MS General Osorio from Hamburg to Buenos Aires and retur in the spring of 1933. Details of observations and soundings given. *Subject Headings* **Upper air observations, Expeditions, Arctic, Atlantic.**

1–38 551.501.9:551.57

Leopold, Luna B., Burn, South and Stidd, C. K., **A key to rain gages in Hawaii.** Th Hawaiian Planters Record, 52(3 & 4):201–246, 1948. (Reprint) 6 charts, tables, ref. (Als published as Technical Paper No. 183 of the Pineapple Research Institute of Hawaii). **DWB**— Brief text presenting problems of tabulating Hawaiian climatic data arising from large numbe of gages and poor indexing. Stations numbered geographically according to islands and fron 1 to 1,145, classified and located on separate charts for each island. Also indexed as to eleva tion, time of reading, length of record, publication observer or observing agency and name *Subject Headings:* **Observatories, Rainfall network, Hawaii.**

1–39 551.501.

Chapman, Donald H., **The Mount Washington Observatory, America's original mountai weather station.** Heating, Piping and Air Conditioning, 20(7):113–118, July 1948. 1 refs. **DLC, DWB**—Account of the experimental work being carried out at the Mount Wash ington Observatory. History of station, physical environment, climatic peculiarities, etc Future possibilities for experimentation in heating and ventilating engineering at this wel equipped natural laboratory. Chief contributions have been along lines of high winds, ice an rime formation, snow crystal and frost observations, etc. *Subject Headings:* **Observatories History.**

1–40 551.506.

Karelin, D. B., **Novyi Polet k Severnomy Poliusu.** [A new flight to the North Pole] Vsesoiuznoe geograficheskoe obshchestvo, Izvestiia, 78(1):123–124, 1946. 1 fig. **DWB, DLC**— Brief description of flight to North Pole early in Oct. 1945 by Arctic Institute of Leningrad t make autumn ice observations in the western sector of the Russian Arctic. Flew via Khatanga Bay, Cape Chelyuskin and Cape Molotov in the Severnaya Zemlya group; returned via Kotelny Island in New Siberian Group and Chokurdakh near mouth of Indigirka. *Subjec Headings:* **Airplane weather reconnaissance, Arctic Ocean.**

1–41 551.506.7:551.5:629.13

Haynes, B. C., **Polar weather flights,** Weather, London, 4(1):11–15, Jan. 1949. 1 plate 2 figs. **DLC, DWB**—Interesting account of flight from Fairbanks, Alaska to the North Pol and return on August 2, 1948. Accompanied by cross-section showing place of lowest temper ature at 20,000 ft. not at pole but about 82°N on the Alaska side. *Subject Headings:* **Upper air observation, Airplane weather reconnaissance, Arctic Ocean.**

1–42 551.509.52:551.506.7

Owens, Clarence, **Giant of the West Indies.** Air Force, 32(1):29–31, 42, Jan. 1949 illus. **DWB**—Readable account of activities of Air Force in hurricane reconnaissance, with mention made of joint Air Force—Navy-Weather Bureau Hurricane Warning Center a Miami, Florida. *Subject Headings:* **Hurricane forecasting, Airplane weather reconnaissance West Indies.**

Upper Air Observations

1–43 551.508.11

Moore, Charles B., Smith, James R., and Goldstein, Seymour, **Constant level balloon** New York University, College of Engineering, Technical Report No. 1. April 1, 1948. 62

, 57 fig., 7 tables, 16 refs. **DWB**—An interesting account, fully illustrated, of attempts to velop a technique for constant level soundings with one or more large balloons. Every tail, including theoretical calculations of density, maximum altitude with various loads, ameters, etc., rate of rise, ballast requirements, and practical phases such as inflation, launch- g, ballast release, recovery, and description of gadgets employed in altitude control, release ballast, sudden deflation after flight is over to allow quicker descent and reduce hazard to iation, adjustment for change from day to night at sunset, various types of material used for lloons, etc. Details of a large number of flights given: trajectory, graph of altitude changes th time as well as meteorological data. *Subject Headings:* **Upper air observations, Sounding lloons.**

1–44 551.508.18

Van Allen, J. A., Fraser, L. W., and Floyd, J. F. R., **The aerobee sounding rocket—** w vehicle for research in the upper atmosphere. Science, 108(2818):746–747, Dec. 31, 1948. ., 3 refs. **DWB**—Description of new rocket used to replace V-2 for research on upper air. our flights from Nov. 1947 through July 1948 mentioned. Diagram of rocket included. *ubject Heading:* **Rockets.**

Instruments

1–45 551.508.21

Bossy, L., and Pastiels, R., **Étude des propriétés fondamentales des actinomètres.** [Study the fundamental properties of actinometers]. Institut Royal Météorologique de Belgique, emoires, Vol. XXIX, Bruxelles, 1948. 116 p., 28 figs., 12 tables, refs., appendix. **DWB, LC**—This monograph discusses in detail the general errors and deficiencies in present-day tinometry, with careful analysis of Ångström and Smithsonian Instruments, the Weickmann rmula, and the Linke-Feuszner screened actinometer. *Subject Headings:* **Actinometers and tinometry.**

1–46 551.508.23:551.581

Gorczynski, Wladyslaw, **Sunshine recorders in America and Europe their comparison d interconversion.** Société des Sciences et des Lettres de Varsovie, Comptes Rendus, asse III. Année 1947 p. 77–114, 9 tables, refs. reprinted Warszawa, 1948. Summary in lish. **DWB**—Comparison of Campbell-Stokes and United States type sunshine recorders, ade at San Diego, Calif. and Blue Hill, Mass. Essential difference is in application of "low- n" correction in the case of the USWB recorder, but not in Europe with the CS recorder. mparison of places in USA and Europe and Africa. *Subject Heading:* **Sunshine recorders.**

1–47 551.508.25

O'Keefe, B. J., **The design of fast thermopiles and the ultimate sensitivity of thermal tectors.** The Review of Scientific Instruments, 18(7):474–482, July 1947. 3 figs., 3 tables, s. **DWB**—Especial reference to use with interrupted radiation in infra-red spectroscopy. urces of noise, minimum detectable power, equilibrium characteristics, thermoelectric aterials, response time, thermopiles for interrupted radiation, theoretical limit of sensitivity. *ubject Heading:* **Radiation instruments.**

1–48 551.508.29

Becker, J. A., Green, C. B., and Pearson, G. L., **Properties and uses of thermistors- ermally sensitive resistors.** The Bell System, Technical Journal, 26(1): 170-212, Jan. 1947. figs., 3 tables, bibliog. **DWB**—Part II deals with application of thermistors: sensitive ermometers and temperature control elements, etc. *Subject Heading:* **Thermistors.**

1–49 551.508.29:551.586

Penman, H. L., and Long, I., **A portable thermistor bridge for micrometeorology among owing crops.** Journal of Scientific Instruments and of Physics in Industry, London, (3):77–80, March 1949. 6 figs., table. **DWB**—Portable unit developed to record temper- ure, humidity, and wind speed in growing potato crops in connection with study of spread virus disease. Construction explained and illustrated, including circuits. Calibration and rformance of dry and wet thermometers and anemometer. Table gives data obtained in

field (open crop, dense crop and open headland). Highest temperature in open crop. High humidity at 50 cm. in open crop, but at lower levels in dense crop. *Subject Headin* **Thermistor, Agricultural meteorology.**

SYNOPTIC ANALYSIS AND FORECASTING

1–50 551.5(02):551.50

†Bugaev, V. A., **Tekhnika sinopticheskogo analiza i prognoza.** [Techniques of synop analysis and forecasting]. Gidromet. Izdat. Leningrad, 1947. 280 p., 167 figs., 20 tabl refs. **DLC**—Progressive steps in charting meteorological data, analyzing surface char northern hemisphere charts, upper air and aerological diagrams and charts, cross-sectio adiabatic charts, upper winds, constant height and constant pressure charts, isentropic analys prognostic charts, weather and forecast summaries. Profusely illustrated and containi references to most American and Russian source material on synoptic and aerological analys *Subject Headings:* **Synoptic analysis, Prognostic charts, Textbooks.**

1–51 551.5(0

Kunits, A. V., **Sinopticheskaia Meteorologiia.** [Synoptic meteorology]. Gidrom Izdat. Moscow, 1947. 327 p., 206 figs., 32 tables. **DLC**—Detailed textbook for studer of the Hydrometeorological service. Synoptic reporting service, communications syste codes, methods of charting observations and analyzing maps, identification of air-masses a fronts, cross-sections; general circulation, vertical motions in atmosphere, condensatic turbulence, origin and development of cyclones, thunderstorms and squalls, fog of varic types, foehn winds, bora, sirocco, blizzards, tornadoes. Forecasting weather; methods a use of soundings, barictopography charts, calculation of winds aloft. Forecasting varic elements of weather; special phenomena. Aviation forecasts; verification. Local signs weather and single station forecasting of thunderstorms, showers and squalls, etc. Discussi of each phase is accompanied by schematic diagrams and illustrative synoptic charts. Ea chapter has appended a list of questions for the student to answer. This is a practical te but completely lacking in references or sources of information. *Subject Headings:* **Synop analysis, Forecasts, Textbooks.**

1–52 551.509.3(0

†Scherhag, Richard, **Neue methoden der wetteranalyse und wetterprognose.** [N methods of weather analysis and weather forecasting]. Berlin, Springer-Verlag, 1948. 4 p., 213 figs., 43 tables, 897 refs. **DWB, MH-BH**—This elaborate edition represents the su stance of over 15 years of intensive labor on the part of the author, who by the way, develop and succeeded in selling to the Reichsamt für Wetterdienst, at the beginning of the war, method of synoptic-aerological analysis, and whose system is now in use in the U. S. Zone Germany where Mr. Scherhag is Chief Analyst. The work is systematically arranged, taki the reader through the entire process of map analysis and forecasting, from the preparati of surface and upper air synoptic charts, through the techniques of compiling isallobaric a thickness charts, to the drawing and interpreting of the prognostic charts and the final pre aration, issuance and even the verification of general or special, short, medium or long-ran forecasts. In addition there is an introductory section on the historical development synoptic meteorology describing the various thermodynamic and aerological charts in u now or in the past, and another section on the General Circulation and its effect on the weath wherein is expounded at some length the Scherhag theory of stratospheric compensati (normal compensation and anomalous compensation) which is used by the author in compili charts of baric topography for the 500, 225, 96 and 47 mb. pressure surfaces. Section I concerns Weather Analysis, with well illustrated sections on the Dynamic High, the Co High, Principle Air Masses, Frontal Zones, Cyclones, Hurricanes, Cold Air Sinks and Strat spheric Movements, followed by examples of the various types of air flow and peculiar synop situations over Europe. The stupendous bibliography contains 897 references, over 50 which are works of the author himself, although there is hardly a well known authority synoptic meteorology or aerology that has been slighted. Very little material published aft 1944 is included, although the book was completed in August 1948 and put on sale in Janua

949. It is unfortunate that the book has not been translated into idiomatic English, and hat the price (84 deutschmarks or over $20.00) is not within the range of the average student r institution here and abroad. *Subject Headings:* **Synoptic analysis, Prognostic charts, Weather forecasting, Textbooks.**

1–53 551.509.312(02)

Bugaev, V. A., **Metod baricheskoi topografii.** [Methods of baric topography]. Gidrometeor. Izdat. Moscow, 1947. 211 p., 80 figs., 11 tables, 58 refs. **DLC**—A well illustrated textbook covering the subject of geopotential, absolute and relative topography, divergence and convergence, advection and applications to forecasting. In addition to an ample bibliography, the appendix contains many tables for calculation of the heights of relative surfaces, etc. *Subject Headings:* **Weather forecasting, Synoptic analysis, Textbooks.**

1–54 551.509.317

Scherhag, Richard, **Die Verwendung der Höhenkarten im Wetterdienst.** [The use of upper air charts in the Weather Service]. Germany, Reichsamt für Wetterdienst, Luftwaffe (Forschungs-und Erfahrungsberichte des Reichswetterdienstes). Ser. B, No. 11, Berlin, 1943. 93 p., 33 figs., 9 tables, 125 refs. **DWB, DAWS**—Construction and use of 500 mb charts; prognostic charts; stratosphere constant level charts; tropopause variations and wave motions in stratosphere. Specific cases taken up with illustrative charts for various levels, etc. *Subject Headings:* **Upper air charts, Weather forecasting, Synoptic analysis.**

1–55 551.509.33(02)

Baur, Franz, **Einführung in die Grosswetterkunde.** [Introduction to large-scale weather science]. Dietrichsche Verlagsbuchhandlung, Wiesbaden, 1948. 165 p., 40 figs., 20 tables, refs. **DLC, DWB, MH-BH**—This book was intended as a revision of the second edition of the author's **"Einführung in die Grosswetterforschung,"** but as it turned out to be a completely different work than the former, the title was changed. The subject matter concerns large-scale weather patterns, advection of heat and energy on a world-wide scale, the effect of volcanoes, ocean currents and ice fields, periodicities in weather, the influence of planets, sunspots and variations in the solar constant on the large-scale circulation; medium and long-range weather forecasting techniques; and finally an appendix with a useful discussion of statistics as applied to analysis of long-series of observations or to obtaining means along a cross-section or over a large area. This work should be translated into English. *Subject Headings:* **Synoptic climatology, Long-range weather forecasting, Statistics in meteorology, General circulation, Textbooks.**

1–56 551.509.33

Baur, Franz, **Musterbeispiele Europäischer Grosswetterlagen.** [Examples of European large-scale weather situations]. Dietrichsche Verlagsbuchhandlung, Wiesbaden 1947. 35 p., 25 charts, 2 tables. **DWB**—A handbook of typical weather types or synoptic situations giving frequency of each at the various seasons (both the greatest and least frequency of each), together with the frequency of the resulting weather conditions over Europe. *Subject Headings:* **Synoptic climatology, Climatic anomalies.**

STRUCTURE AND PHYSICS OF THE ATMOSPHERE

Upper Atmosphere—Ionosphere

1–57 551.510.5

†Mitra, S. K., **The upper atmosphere.** Royal Asiatic Society of Bengal, India, 1947. 516 p., figs., tables, refs. **DWB**—Comprehensive and highly theoretical treatment of present knowledge on the following subjects: pressure and density in outer atmosphere; escape of gases; wind systems; barometric oscillations; temperature distribution; anomalous propagation of sound, meteoric phenomena; ozonosphere; oxygen; ionosphere; magnetic variations; aurora polaris; theories of magnetic storms and auroras; lights from the night sky; appendix contains notes on spectroscopy, conductivity and dielectric constants; etc. 16 pages of bibliography by chapters; author and subject index; well illustrated. *Subject Heading:* **Upper atmosphere.**

1–58 551.510.535:551.594.5

Woodward, R. H., **A model of the ionosphere.** Terrestrial Magnetism and Atmospheric Electricity, 53(1):1–25, March 1948. 14 figs., 23 refs. **DLC, DWB**—The author summarizes theories of various phenomena associated with the ionosphere and presents a model in an attempt to qualitatively interpret observations and phenomena. Discussion of the earth's permanent magnetic field; solar and lunar daily fields; magnetic storms; auroral displays and luminescence in the upper atmosphere; earth-currents and atmospheric electricity; radio exploration of the ionosphere; and finally the model on which later quantitative refinements can be made. The author assumes that in low and intermediate latitudes electrons rise; they migrate through the upper ionosphere to the polar regions where they fall and complete the circuit through the ground. Under the action of electric field positive ions formed at great heights by UV light, rise, whereas negative ions descend. Since the ions are constrained to helical paths along the sloping magnetic lines of force, positive ions collect in ring near the plane of the geomagnetic equator, while negative ions accumulate in the polar regions. Solar radiation pressure distorts the ion-ring and blows the tail to a height of several earth-radii. Electric discharges between positive ion-ring and negative polar caps produces magnetic disturbances and associated auroral displays. *Subject Headings:* **Ionosphere, Auroras, Terrestrial magnetism.**

1–59 551.593.5:551.510.53

Shtaude, N. M., **K voprosu o rasseianii vtorogo poriadka vo vremia sumerek.** [On the question of second order scattering during twilight]. Akademiia Nauk, SSSR, Izvestiia, Ser. Geogr. and Geofiz., 12(5):387–393, 1948. 3 figs., 3 tables, 4 refs. **DWB, DLC**—Calculations of zenith brightness based on several considerations and hypotheses of the temperature gradient in the stratosphere. In Russian with Russian abstract. *Subject Headings:* **Optical phenomena, Stratosphere.**

1–60 551.510.535:55.038

Ashour A. A., and Price, A. T., **The induction of electric current in a non-uniform ionosphere.** Royal Society of London, Proceedings Ser. A., 195(1041):198–224, Dec. 7, 1948. 7 figs., 5 tables, 16 refs., 37 equations. **DWB**—Discussion of aperiodic inducing field, induced field for periodic variations; induced current system for periodic fields; micropulsations of the earth's field, induced field resulting from sudden changes in the inducing field; distribution of induced currents following a sudden change in the field; the initial phase of magnetic storms; estimated conductivity of the ionosphere; Schmidt's "Wandering Vortices," Sangster's rotations; etc. *Subject Headings:* **Ionosphere, Terrestrial magnetism.**

1–61 551.510.535

Revirieux, Pierre, **Sur la localisation de la region ionisée dite E sporadique de la haute atmosphère.** [On localization of the sporadic ionized "E" layer in the high atmosphere]. Académie des Sciences, Paris, Comptes Rendus, 227(1):79–80, July 5, 1948. **DWB**—*Subject Heading:* **Ionosphere.**

1–62 551.594.6:551.510.535

Romell, Dag., **Influence du déplacement vertical des couches ionisées sur la fréquence des ondes radioélectriques.** [Influence of vertical displacement of the ionised layers on the frequency of radio-electric waves]. Académie des Sciences, Paris, Comptes Rendus, 226(12):1007, March 22, 1948. **DLC, DWB**—Theory that the ionized layers themselves, not the ionized gas, moves rapidly in a vertical sense. Possible effect of winds in the high atmosphere (Döppler effect). *Subject Headings:* **Atmospherics, Ionosphere, Radio transmission.**

1–63 551.510.536:551.508.18

Grimminger, G., **Probability that a meteorite will hit or penetrate a body situated in the vicinity of the earth.** Journal of Applied Physics, 19(10):947–956, Oct. 1948. 2 figs., 4 tables, 17 refs., 27 equations. **DWB**—When a body is situated at high altitudes (about 200 km. or above) it is exposed to impact by meteorites. Probability of hit estimated, and if hit, thickness of metal plate necessary to prevent perforation by meteorites of different sizes. Probability

f large enough meteorite hitting an object remaining for a short time in the atmosphere, is egligibly small. (Originally prepared as a Douglas Aircraft Report dated May 1946). *ubject Headings:* **Meteorites, Rockets.**

Mechanics and Thermodynamics of the Atmosphere

1–64 551.511

Hicks, B. L., **On the characterization of fields of diabatic flow.** Quarterly of Applied Iathematics, 6(4):405–416, Jan. 1949. refs. **DLC**—Basic equations; properties of irrotaonal N fields; the relations among character, form, type change and heat sources; elliptic ow, parabolic flow, hyperbolic flow, mixed flow. *Subject Heading:* **Thermodynamics.**

1–65 551.511:536.75

Tolman, Richard C. and Fine, Paul C., **On the irreversible production of entropy.** Reiews of Modern Physics, 2(1):51–77, Jan. 1948. **DWB**—Formulation and consequences of ie first and second laws of thermodynamics; examples of irreversible entropy production; pplications of the efficiency equation; applications of first and second law equations; discuson of the concept of temperature. *Subject Headings:* **Thermodynamics, Entropy.**

1–66 551.511

Lettau, Heinz, **Zur Theorie der partiellen Gasentmischung in der Atmosphäre.** [On the ieory of partial dissociation of gas in the atmosphere]. Meteorologische Rundschau, (1–2):5–10, July–Aug. 1947. 2 tables, 38 equations, bibliog. **DLC, DWB**—Mixing of gases atmosphere by means of turbulence is so thorough at all elevations thus far measured, that olecular "austausch" cannot be considered. When vertical circulation is lacking, the light ises increase with height. *Subject Headings:* **Mechanics and thermodynamics of the atosphere, Turbulent exchange.**

1–67 551.511

Meksyn, D., **Integration of the boundary-layer equations for a plane in a compressible uid.** Royal Society of London, Proceedings Ser. A., 195(1041):180–188, Dec. 7, 1948. refs. **LC, DWB**—It is shown that in the first approximation the asymptotic integration gives nple accuracy and that it can be determined by simple and elementary methods. The sults of this comparatively rapid calculation are in very satisfactory agreement with the sults of the lengthy numerical calculations made by Emmons and Brainerd for certain ecific values of Prandtl number and Mach number. (*From Author's abstract*). *Subject eading:* **Turbulence theory.**

1–68 551.515.11

Bondi, H., **The growth of meteorological disturbances.** Cambridge Philosophical Society, roceedings 45(1):92–98, Jan. 1949. 36 equations. **DWB**—Sharp distinction between slow rge-scale (meteorological) and rapidly varying small-scale (acoustical) phenomena. Time ale of large-scale phenomena derived. Heat conduction and viscosity set a lower limit to mensions of such disturbances. Effect of earth's rotation negligible. *Subject Heading:* tmospheric disturbances.

RADIATION AND TEMPERATURE

Solar Radiation and Albedo

1–69 551.521.1:697

Stewart, James P., **Solar heat gain through walls and roofs for cooling load calculations.** eating, Piping and Air Conditioning, 20(8):121–128, Aug. 1948. 3 figs., 4 tables, 12 refs. **WB, DLC**—A simplified method is presented for determining heat gain through walls and ofs due to combined effects of solar radiation and air temperature differences. This is complished by tables of equivalent temperature differentials, in which all types of building nstruction are grouped under a few classifications. (*Author's abstract.*) *Subject Headings:* **olar radiation, Applied meteorology, Heating and ventilating.**

1–70 551.521.

Sun million degrees hot. Science News Letter, 52(11):164, Sept. 13, 1947. **DLC**—By using snooperscope, sniperscope and infra-red signaling device, Univ. of Michigan, McMath Hulbert Observatory scientists discovered discrepancy between the infra-red spectrum line produced by iron atoms and the prediction from current theory. Temperatures much highe than 4,800° A now assigned must occur. Dr. Arthur Adel of Michigan Observatory report new atomic lines between 15,000° and 16,000° A that cannot be duplicated on earth. Lea sulfide cell used at Northwestern Technical Institute has range limited by 20,000° A. Equip ment to be used this winter will extend range to 40,000° A whereas previous limits were 11,000 to 15,000° A. *Subject Heading:* **Solar radiation.**

1–71 551.521.1:69

Parodi, Hippolyte, **Note sur l'échauffement produit par le rayonnement solaire dans des enceintes closés par des parois absorbantes.** [Note on the heating produced by solar radiation in spaces enclosed by absorbent walls]. Académie des Sciences, Paris, Comptes Rendus 226(26):2128–2129, June 28, 1948. fig., table. **DLC**—An attempt to adjust degree-day calculations by taking into account the daily global radiation on a horizontal surface. *Subject Headings:* **Solar radiation, Heating and ventilating.**

1–72 551.521.14

Iaroslavtsev, I. N., **Otrazhennaia radiatsiia ot estestvennykh poverkhnostei v Tashkente** [Reflection of radiation from natural surfaces in Tashkent]. Akademiia Nauk, SSSR Izvestiia, Ser. Geogr. i Geofiz., 12(6):523–530, 1948. 9 figs., 7 tables, 4 refs. **DWB, DLC**—Results of systematic observation on reflection from snow, green and dry vegetation, conducted at Tashkent for 32 months in 1940 and 1944–46, observations made with albedometer of Iu. D. Ianishevskov. Intensity of reflected radiation, albedo of natural cover, and total heat of reflected radiation; calculated albedo varies from 12% for grass to 93% for snow. Monthly total amount of reflected radiation constitutes 15–45% of monthly total heat of radiation. On the average, one-fourth of the annual total radiation is reflected from natural cover of the earth. *Subject Headings:* **Solar radiation, Albedo, Tashkent.**

1–73 551.521.2:551.524.4

Reuter, Heinz, **Zur theorie der nächtlichen Abkühlung der bodennahen Schicht und Ausbildung der Bodeninversion.** [On the theory of nocturnal cooling of the ground layers and the formation of the ground inversion]. Akademie der Wissenschaft in Wien, Sitzungsberichte, IIa, 155(7 & 8): 333–358, 1947. 4 figs., 29 refs. **DWB**—After showing theoretical basis for calculations, the author presents in tables and diagrams curves for surface cooling with various surfaces: moist sand, sandy loam, granite, snow, ice and water, and compares inversion heights obtained from theoretical rate of cooling with actual observations made at Tulln, Austria in Oct. 1946, indicating close agreement. *Subject Headings:* **Terrestrial radiation, Inversions.**

1–74 551.521.3

Mohler, Orren C., and Benedict, W. S., **Atmospheric absorption of water vapor between 1.42μ and 2.50μ.** The Physical Review, 74(6):702–703, Sept. 15, 1948. table, 5 refs. **DWB**—Brief note on results of rotational analysis of infra-red solar spectrum with respect to lines resulting from atmospheric water vapor. *Subject Heading:* **Absorption.**

1–75 551.521.3

Nelson, R. C., and Benedict, W. S., **Absorption of water vapor between 1.34μ and 1.97μ.** The Physical Review, 74(6):703–704, Sept. 15, 1948. table, 7 refs. **DWB**—Note on absorption of water vapor using PbS photo-conductive cell with the spectrograph and amplifier of Nelson and Wilson. *Subject Heading:* **Absorption.**

1–76 551.521.6

Iaroslavtsev, I. N., **Sine-krasnoe otnoshenie (c/k)z = 0 kak opticheskaia kharakteristika neba.** [Blue-red relationship (c/k)z = 0 as an optical characteristic of the sky]. Akademiia

Nauk, SSSR, Izvestiia, Ser. Geogr. i. Geofiz., 12(5):395–403, 1948. 3 figs., 9 tables, 6 refs. **DWB, DLC**—Results of 3 years of observation on the relation of the intensity of blue and red radiation from the zenith, both fluxes intercepted by a selenium photoelement through a Schott filter of type Bg 5 and Rg 5. Seven conclusions given, as derived from data obtained at Tashkent during 1942–1944. *Subject Headings:* **Radiation, Atmospheric optics.**

1–77 551.521.6:697

Tasker, Cyril, **How infra-red radiation is used for space heating.** Heating, Piping and Air Conditioning, 19(10):104–106, Oct. 1947. **DA, DWB, DLC**—A review of two papers presented before the British Institution of Heating and Ventilating Engineers, entitled "**Specific Effects of Infra-Red,**" and **"Infra-Red in Relation to Space Heating"** (Vol. 13, No. 129, and Vol. 14, No. 138 of Journal of Institution of Heating and Ventilating Engineers). Contains material of interest for those concerned with radiant heating for industrial purposes and for human comfort. Comprehensive bibliography and description of advances in application of "infra-red." Review contains charts showing (1) transmission of radiation through water and the human skin, (2) relation of emissive power to temperature for black body, water vapor and CO_2, (3) black body radiation energy distribution at different radiant temperatures, (4) radiant temperature in relation to distance from black body radiator, (5) diagram of overhead radiant heater showing operation. Optimum condition for comfort probably lies around an air temperature of 55°F. and a density of radiant flux around 75 Btu. per sq.ft. per hr. Possibilities and difficulties in developing equipment for industrial use. Reflectors, beams, gas radiants, reflective paints, convection currents set up with variable output. *Subject Headings:* **Radiation, Heating and ventilation, Industrial meteorology.**

1–78 551.521.6:523.74

Waldmeier, M., **Radiofrequente strahlung und elektronentemperature der sonnenkorona.** [Radiofrequency radiation and electrontemperatures of the sun's corona]. Vierteljahrsschrift der Naturforschenden Gesellschaft in Zürich, 93(2):122–135, June 30, 1948. 4 figs., 2 refs. **DWB, MH-BH**—Discussion of radio-frequency solar radiation. The electron-temperature of the corona is computed and found equal to 1.4×10^6 degrees. Corona must be considered opaque for these wave-lengths. Corona emits these radiations with same intensity as a black body of a temperature same as above. Observations agree with theoretical calculations. *Subject Headings:* **Radiation, Sunspots.**

1–79 551.524.37:551.582(711)

*Conner, A. J., **The frost-free season in British Columbia.** Canada, Dept. of Transport, Meteorological Div., Toronto, 1949. 20 p., chart, tables. **DWB**—Text comprises 15 pages of discussion on causes of frost, local radiation and air mass peculiarities, variations with latitude and altitude in length of period with frost. Tables give elevation, years record, average earliest and latest date of last frost in spring and first in autumn, and average length of frost-free period for 258 stations, all shown on fold-in map. *Subject Headings:* **Frost, Climatology, British Columbia.**

1–80 551.524.4:551.521.14

Kuznetsov, E. S., **Raspredelenie temperatury atmosfery po vertikali pri luchistom ravnovesii.** [Vertical temperature distribution in the atmosphere with radiative equilibrium]. Akademiia Nauk, SSSR, Instituta Teoreticheskoi Geofiziki, Trudy, Vol. I., p. 3–94, 1946. Tables, 12 refs., 326 equations. **DLC**—Comprehensive treatment of subject, leading to calculation of absorption spectrum, albedo of earth's surface, horizontal discontinuity surfaces of various types, and finally the influence of dissipation of radiational energy on lapse rates. *Subject Headings:* **Vertical temperature distribution, Albedo, Radiation and absorption.**

Earth Temperatures and Frozen Ground

1–81 551.525.2:697

Guernsey, E. W., Betz, P. L., and Skau, N. H., **Earth as a heat source or storage medium for the heat pump.** Heating, Piping and Air Conditioning, 21(5):117–122, May 1949. 9 figs., 2 refs. **DWB**—Relationships between rates of heat flow and temperature either in a uni-

directional or reversible (cyclic) system. *Subject Headings:* **Earth temperatures, Industri meteorology.**

1–82 551.525.4:551.583

Birch, Francis, **The effect of pleistocene climatic variations upon geothermal gradient** American Journal of Science, 246(12):729–760, Dec. 1948. 8 tables, fig., 29 refs. **DLC**— Theoretical considerations, hypothetical climates at the surface during past million year Variation probably not over 100°C. so that effect on gradients probably very slight. Observe gradients in Scotland, U. S., South Africa, etc., indicate that maximum correction would b 30°C. per km. and that climatic changes cannot explain such variations, nor can gradie changes be used to determine past climates. *Subject Headings:* **Earth temperatures, Pale climatology, Geothermal gradient.**

1–83 551.525

Claude, Georges, and Claude, André-Georges, **Sur l'utilisation thermique du sol.** [C the utilization of the heat of the ground]. Académie des Sciences, Paris, Comptes Rendu 228(7):544–545, Feb. 14, 1949. **DLC, DWB**—Calculation of amount of thermal energy the ground at different depths. *Subject Headings:* **Earth temperatures, Geothermal gradien**

1–84 551.525

Noble, James A., **Evidence for a steepening of geothermal gradients in some deep min and drill holes.** American Journal of Science, 246(7):426–440, July 1948. 3 figs., 4 table refs. **DLC, DWB**—Direct readings of rock temperatures taken at the Homestake Mi (Black Hills of South Dakota) indicate a geothermal gradient that steepens with depth. Da given for Yates shaft down to 4,700 ft. level. Method of measuring temperature describe Sources of error. Comparison with thermal gradients in other deep mines and drill hole indicates that this steepening of gradient is a general rather than local effect. Attempt a explanation of effect. *Subject Headings:* **Earth temperatures, Geothermal gradient.**

1–85 551.525.5:63:551.579

Slater, Clarence S., **The action of frost on the water-stability of soils.** Journal of Agr cultural Research, 78(10):341–346, May 15, 1949. 6 tables, 9 refs. **DWB**—Results of wo on experimental plots at Wooster and Holgate, Ohio, and at College Park, Md., indicate tha freezing and thawing decreased the water-stability of moist soils, and that the effect is mo marked at high moisture contents. Loss of water-stability was increased by repeated freezi and thawing, but rate of freezing and thawing had no effect. *Subject Headings:* **Frozen soil Agricultural meteorology, Soil moisture.**

1–86 551.525

Beliakov, M. F., **O sviazi geoizoterm s Dokembriiskim Rel'efom Russkoi platformy.** [C the connection between geoisotherms and the Dokembriisk Relief of the Russian Shield Akademiia Nauk, SSSR, Doklady, 64(2):225–228, 1949. fig., table, 20 refs. **DWB, MH-BE** *Subject Headings:* **Earth temperatures, Paleoclimatology.**

ATMOSPHERIC PRESSURE AND WIND

Pressure Variations

1–87 551.54

Tillotson, Ernest, **Microseisms and atmospheric oscillations.** Nature, London, 160:321 322, Sept. 6, 1947. *Subject Headings:* **Microseisms, Pressure variations.**

1–88 551.543

Chapman, S., and Tschu, K. K., **The lunar atmospheric tide at twenty-seven statio widely distributed over the globe.** Royal Society of London, Proceedings Ser. A., 195(1042 310–323, Dec. 22, 1948. 20 tables, fig., refs. **DLC, DWB**—Of the twenty-seven station fourteen are in America, seven in Africa and six in other parts of the world. Determinatio at all of these stations, made from bi-hourly pressure readings are given in tables, together wit discussions of the results for the USA, South America, Africa, Coimbra, Lisbon and Sa

Fernando, Haifa-Jerusalem, Manila and Wellington, N. Z. Results: (1) Amplitude C_2 decreases with increasing latitude, though irregularly; (2) phase Θ_2 is in usual quadrant but evidence of lag of high tide after moon's transit; (3) reduction in C_2 and Θ_2 near December solstice; (4) no appreciable variation with height up to 3350 m.; (5) reduction of C_2 on the west coast of the USA; (6) several stations in Africa, Singapore and Batavia show results indicating a specially interesting region where the tide has the biggest amplitude found anywhere on the earth, and where the phase lag is normal; (7) asymmetrical distribution of C_2 about the equator in Africa. *From author's abstract.* *Subject Headings:* **Pressure variations, Lunar influences, Atmospheric tides.**

1–89 551.543.2

Defant, Friedrich, **Grundlagen einer theorie des jährlichen luftdruckganges.** [Rudiments of a theory of the annual march of air pressure]. Geografiska Annaler, 29(1–2):20–47, 1947. 9 figs., 2 tables, 33 equations, 13 refs. **DWB, DLC**—The mean annual air pressure regime with a land and sea distribution has a double symmetrical form. Application to the yearly pressure march on the earth's surface of the Northern Hemisphere. Comparison with the empirical data. Results presented graphically and in tables. *Subject Heading:* **Pressure variations.**

1–90 551.543.3:55.038

Wulf, Oliver R., and Nicholson, Seth B., **Terrestrial influences in the lunar and solar tidal motions of the air.** Terrestrial Magnetism and Atmospheric Electricity, 52(2):175–182, June 1947. 4 figs., ref. **DWB.** *Subject Headings:* **Atmospheric tides, Terrestrial magnetism.**

Turbulence

1–91 551.551:551.511

Batchelor, G. K., and Townsend, A. A., **Decay of isotropic turbulence in the initial period.** Royal Society of London, Proceedings, Ser. A., 193(1035):539–558, July 21, 1948. 12 figs., 2 tables, 9 refs. **DWB, DLC**—Continuation of earlier work by same authors and experimental verification of some recent theoretical investigations. Results of measurements of turbulent intensity; significance of "initial period of decay"; development of law for decay; experimental confirmation that the decay law changes in the expected direction when the time is large. Suggested division of life-history of turbulence into initial, transition and final periods; within the initial period a classification based on the Reynolds Number is possible, also. Some speculations on the interpretation of the initial period are presented. (*Partly from author's abstract.*) *Subject Headings:* **Turbulence, Mechanics and thermodynamics of the atmosphere.**

1–92 551.551

Batchelor, G. K. and Townsend, A. A., **Decay of turbulence in the final period.** Royal Society of London, Proceedings, Ser. A., 194(1039):527–543, Nov. 9, 1948. 5 figs., refs. **DWB, DLC**—Results of experiments carried out in the Cavendish Laboratory, by aid of wind tunnel and hot-wire anemometer. Review of previous discussions of isotropic turbulence at small Reynolds Numbers; consideration of local or unaveraged turbulent velocities, with deduction of asymptotic decay law and other results; double velocity correlations in the final period of decay; measurements of turbulence in the final period; nature and conditions for existence of final period decay. Thorough mathematical and graphical presentation. *Subject Heading:* **Turbulence.**

1–93 551.551:551.511

Batchelor, G. K., **The role of big eddies in homogeneous turbulence.** Royal Society of London, Proceedings, Ser. A., 195(1043):513–532, Feb. 3, 1949. **DWB, DLC**—Continuation of work of Heisenberg on decay of isotropic turbulence to show that small eddies play the role of viscosity in dissipating energy of big eddies. *Subject Headings:* **Turbulence, Mechanics and thermodynamics of the atmosphere.**

1–94 551.551

Chandrasekhar, S., **On the decay of isotropic turbulence.** The Physical Review, 75(9):1454–1455, May 1, 1949. fig., refs. **DWB**—Letter to editor discussing Heisenberg's recent

paper. Royal Society of London, Proceedings A195(1042):402–406, 1948 and commentin that whenever the Reynolds number is finite there is always a minimum size to the eddies durin the process of decay, and this minimum size grows with time like $(t)^{1/2}$. But when the Rey nolds Number becomes infinite this minimum size tends to zero. *Subject Heading:* **Turbulenc theory.**

1–95 551.55

Heisenberg, W., **On the theory of statistical and isotropic turbulence.** Royal Society c London, Proceedings Ser. A., 195(1042):402–406, Dec. 22, 1948. **DWB, DLC**—Applicatio of statistical theory to problem of decay of turbulent motion on small scale eddies. Cor tinuation of work started by Taylor, von Karmen and Howarth and expanded by Kolmogorof Onsager and Weizsaecker in their similar hypotheses to determine spectrum for eddies wit large Reynolds Numbers. Heisenberg in Zeit. Physics (1948) extended calculations of th latter to include those components with small Reynolds Numbers. *Subject Heading:* **Tur bulence.**

1–96 551.551:551.58

Huss, P. O., and Portman, D. J., **Study of natural wind and computation of the austausc turbulent constant.** The Daniel Guggenheim Airship Institute, the University of Akro Akron, Ohio. Technical Report No. 2, Feb. 1949. (DGAI Report No. 156). 50+ p., 3 figs., tables, 19 refs. **DWB**—Results of observations made at several levels on a 350 ft. towe near Akron, Ohio. An intensive program of micrometeorological observations, includin pyrheliometer, wind temperature, humidity, etc., for determining austausch coefficient wa carried out and methods, theory, instrumentation and results, together with recommendatio for future investigations is given in tables and graphically. Variations of wind with heigh difficult to determine accurately. Variations in Richardson Number as well as austausc determined. *Subject Headings:* **Micrometeorology, Turbulent exchange.**

1–97 551.55

Johannessen, Thor Werner, **On the eddy stress and viscosity in air currents.** Meteo ologiske Annaler, Oslo. 2(14):465–499, 1948. 2 figs., 13 tables, refs. (Original text in English **DWB**—The results of an examination of the eddy stress in air masses of different stratificatio smoothed over long and short periods. Laboratory investigations of turbulence lead to a equation which is not applicable under natural conditions because in nature the atmospher is stratified, the air currents are under the influence of shearing stress, etc. Eddy viscosit and turbulence studied by means of soundings at DeBilt. *Subject Headings:* **Turbulence Wind structure.**

1–98 551.55

Obukhov, A. M., **Turbulentnost' v temperaturno neodnorodnoi atmosfere.** [Turbulenc in an atmosphere with inhomogeneous temperature]. Akademiia Nauk, SSSR, Institut Teoreticheskoi Geofiziki, Trudy, Tom I., 1946. p. 95–115. 3 figs., 3 tables, 6 refs., 38 equa tions. **DLC**—Influence of vertical temperature inhomogeneity on evolution of turbulence i the atmosphere. This influence is quantitatively calculated by applying correction factors t Prandtl's semi-empirical theory: the universal Richardson's criteria being used. As a resul it is possible to quantitatively evaluate the height of the dynamic turbulent layer under variou conditions. *Subject Heading:* **Turbulence.**

1–99 551.551:551.511:551.524.

Obukhov, A. M. **Struktura temperaturnogo polia v turbulentnom potoke.** [Structur of the temperature field in a turbulent current]. Akademiia Nauk, SSSR, Izvestiia, Se Geogr. i Geofiz., 13(1):58–69, 1949. fig., 8 refs., 25 equations. **DWB, DLC**—Development c Kolmogorov's theory with application to the problem of micro-variations in temperature Since sensitive instruments for measuring slight variations of temperature in a turbulen current are not available, use is made of statistical theory to study the degree of inhomogeneit of the temperature field with respect to free energy, to changes in time, pulsations, etc. Use not only for theoretical studies, but in atmospheric acoustics and optics. *Subject Headings* **Turbulence, Wind structure.**

1–100 551.551:551.511

Sheppard, P. A., **Wind structure and atmospheric turbulence,** Part II. **Theoretical studies.** Science Progress, 37(145): 68–82, Jan. 1949. (Part I, July 1948). **DLC, MH-BH**—Treats of the equation of diffusion, the flux equation, and the diffusivity as function of height near the ground; diffusivity in large-scale flow patterns in the free atmosphere; the heat flux equation; Richardson's criterion of turbulence. *Subject Headings:* **Turbulence, Wind structure.**

AQUEOUS VAPOR AND HYDROMETEORS

Artificial Modification of Clouds

1–101 551.574.2

Schaefer, Vincent J., **Fourth quarterly progress report, project cirrus.** Schenectady, General Electric Research Laboratory, July 1, 1948. 7 p. **DWB**—Report on personnel, change in base of operations, flight program, instrumentation (cloud meter, silver iodide generator); research projects (detection of supersaturation by free balloons carrying dry ice, studies of atmospheric electricity, sky brightness, radio reception, supercooling in bulk water, cumulus chain reaction, growth of water droplets, automatic ice nuclei counter, change in crystal habit of ice by vapor, jet engine icing, silver iodide studies, foreign particle nuclei and Mt. Washington studies on ice nuclei). *Subject Heading:* **Artificial condensation.**

1–102 551.577.11

Dady, Georges, **Contribution à l'étude des précipitations.** [Contribution to the study of precipitation]. Note in Académie des Sciences, Paris, Comptes Rendus, 225(25):1349–1351, Dec. 22, 1947. ref. **DWB, DLC**—Theory and experiments in formation of precipitation and cloud in laboratory. *Subject Heading:* **Artificial precipitation.**

1–103 551.577.32:551.510.42

Falconer, Raymond E., and Vonnegut, Bernard, **Smoke from smelting operations as a possible source of silver iodide nuclei.** General Electric Research Laboratory, Occasional Report No. 4, Project Cirrus. Schenectady, July 15, 1948. 4 p., 2 figs., 4 refs. **DWB**—Possibility that silver iodide from smelter stacks might increase rainfall investigated by comparing rainfall data for Utah with data 1896–1946 for states west of Rocky Mountains, and years with high smelter production with years of low production in regard to anomalies of precipitation. No significant correlation could be found. *Subject Headings:* **Rainfall variation, Atmospheric pollution, Artificial precipitation.**

1–104 551.577.53

Bannon, J. K., **Rain making.** Weather, London 3(9): 261–266, Sept. 1948. 2 plates, 11 refs. **DLC, DWB**—Discussion of Bergeron theory of rain formation; artificial seeding of clouds; production of ice crystals; physical changes in a seeded cloud; growth of seeded cloud; seeding with silver iodide; seeding at temperatures above freezing; Langmuir's break-drop theory; practical possibilities. Describes attempts at seeding by Langmuir, Vonnegut, Schaefer in U. S., and of Leopold and Halstead in Hawaii as well as of experiments in Australia. *Subject Heading:* **Artificial precipitation.**

1–105 551.577.53

Bassett, Cyril, **Plan rainmaking research in Canada.** Canadian Aviation, 21(9):18–19, Sept. 1948. illus. (Part 2) 21(10):35, Oct. 1948. **DWB, DLC**—Popular and instructive article on plans for testing rainmaking theories in Canada: in the laboratory and in the field, in eastern Canada and in the prairies, using Royal Canadian Air Force fliers and planes. Note on legal aspects of rain making, giving cases in the U. S. which have come up in the last year or so. *Subject Headings:* **Artificial precipitation, Popular articles, Canada.**

1–106 551.577.53

Coons, Richard D., Jones, Earl L., and Gunn, Ross, **Third partial report on artificial production of precipitation—orographic stratiform clouds—California,** 1949. American Meteorological Society, Bulletin, 30(7):255–256, Sept. 1949. table, 3 refs. **DWB**—*Subject Heading:* **Artificial precipitation.**

1–107 551.577.38

Debierne, André, **Sur la guerre, la bombe atomique, la pluie, la sécheresse, le beau temps et le régime Bikinien.** [On the war, atomic bomb, rain, drought, good weather and the Bikini Regime]. Académie des Sciences, Paris, Comptes Rendus, 226(16):1302–1304, April 19, 1948. **DWB**—Note on possible cause of drought in recent months. *Subject Headings:* **Droughts, Rainfall variations.**

1–108 551.577.53

Drake, Lawrence, **Rainmakers are all wet.** '48. The Magazine of the Year, 2(3):61–70, March 1948. 2 figs. **DLC** -A discussion of the attempts up to the date of publication, to produce artificial rain by means of seeding clouds with dry ice. The author takes a dim view of the effectiveness of the method, and quotes authorities such as H. Wexler, Ben Holzman, and Gen. Eisenhower to refute the more optimistic claims of journalists reporting on the Schaeffer-Langmuir experiments. *Subject Headings:* **Artificial precipitation, Popular articles.**

1–109 551.577.53:551.574.2

Langmuir, Irving, **The production of rain by a chain reaction in cumulus clouds at temperatures above freezing.** General Electric Research Laboratory, Occasional Report No. 1, Project Cirrus, Schenectady, April 15, 1948. 26 p., 13 tables, refs. **DWB**—Theory of cloud droplet growth. Natural processes in formation of heavy rain. Accretion theory of growth of raindrops. Deposition of rime on cylinders, spheres and ribbons. Calculation of terminal velocity of a falling drop. of effective efficiency of droplet collection by falling drops; rate of growth of falling drops by accretion; Hawaiian experiments in seeding above 0°C. rain produced by chain reaction; types of rain and snow in response to seeding; self propagation of storms; divergent weather effect. *Subject Headings:* **Artificial precipitation, Artificial condensation.**

1–110 551.577.53:551.576.11:551.515.4

Schaefer, Vincent J., **The possibilities of modifying lightning storms in the Northern Rockies:** U. S. Forest Service, Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Montana. Station Paper No. 19, Jan. 1949. 18 p., 5 refs. **DWB**—As a result of interest expressed by Mr. H. T. Gisborne, Chief of Div. of Fire Research of the U. S. Forest Service, Mr. Schaefer spent several weeks in the summer of 1948 studying and photographing cumulus clouds near Priest Lake, Idaho, with the object of testing the possibility of modifying thunderstorms which cause so many fires in the Northern Rockies. This report describes his activities and recommendations for an observation and cloud seeding program in this region. Unfortunately there were few storms during the month Schaefer spent at Priest Lake, and none of them presented ideal conditions for test and control. This report would serve as a guide for any organization attempting to inaugurate a program of seeding for production of artificial precipitation or cloud dissipation. *Subject Headings:* **Artificial precipitation, Cloud structure, Thunderstorms.**

1–111 551.577.53

National geographic, July 1947, p. 108–9. **DWB**—(Pictures of Schaefer's experiment with deep freeze box, and of Ellison's attempt to produce rain at Gresham, Oregon). *Subject Heading:* **Artificial precipitation.**

Precipitation and Snow Cover

1–112 551.578

Appleby, F. V., **A note on the classification of rain storms.** Royal Meteorological Society Quarterly Journal, 72(312–313):230–234, April–July 1946. 4 figs., table, 7 refs., 7 equations. **DWB**—*Subject Heading:* **Rain.**

1–113 551.578.13(969)

Leopold, Luna B., and Stidd, C. K., **Rainfall distribution—Hawaii's weather forecast problem.** "Reprint from Hawaiian Sugar Technologist, Sixth Annual Meeting, Nov. 1948." 4 p., 2 figs. **DWB**—Charts, explained by the test, show relation of monthly to annual normal and actual rainfall at various stations in Kauai, Oahu, Maui and Hawaii for March–July and

regression curve for all islands. Enables a forecast for monthly precipitation to be made in terms of a straight line slope and intercept which may be applied to an entire island. *Subject Headings:* **Rain, Statistical forecasting, Hawaii.**

1–114 551.582(45):551.578.42

Bossolasco, Mario, **Le precipitazioni nevose nell'italia settentrionale**: I. [The snowfall precipitation in Northern Italy: I.]. Geofisica Pura e Applicata, Milano, XII(5–6):286–292, 1948. **DWB**—Distribution of percentage snowfall with elevation in the mountains of Northern Italy. (In Italian). *Subject Headings:* **Snow, Italy.**

1–115 551.578.45:551.579.2:63

Rogers, R. W., **Operation snowbound.** Soil Conservation, 14(10):219–223, May 1949. 6 figs., table. **DWB**—Report on part Soil Conservation Service and its employees played in relief work during blizzards and record snow drifts of Dec.–Jan. 1948–49 in the Far West and Great Plains. *Subject Headings:* **Blizzards, Snowstorms, Highways.**

1–116 551.578.46

Macdonald, Arthur, **Airports under snow.** Canadian Aviation, 20(12):66 & 88, Dec. 1947. illus. (Continuing from last month the story of the Dominion Office of Transport's annual battle against snow of the airports). **DWB**—Value in compacting snow to 5″ or so, and scraping off any excess. Wet snow must be removed. Corrugated surface reduces glare, prevents skidding. Cleared runway more dangerous if ice occurs as it cannot be roughed up to give more traction. *Subject Headings:* **Snow cover, Airports, Canada.**

Hydrometeorology

1–117 551.579.5:631.4

Bendixen, T. W., Hershberger, M. F., and Slater, C. S., **A basis for classifying soil permeabilities.** Journal of Agricultural Research, 77(5):157–168, 1948. 2 figs., 4 tables, 7 refs. **DWB**—Cooperative investigations of the Office of Research, Soil Conservation Service, and the Maryland Agricultural Experiment Station, College Park, Md. Published as Scientific Article No. A179, Contr. No. 2080 of Maryland Agricultural Experiment Station. Need for definitions of descriptive classes of soil permeability in terms of rate of water movement lead to present work. Methods of sampling, errors introduced in sampling, data obtained on Coastal Plains soils, on Ohio and Missouri soils given in tables and graphically. Pore-space classification based on Coastal Plains soils was found to be in practical agreement with the field classification of the Missouri soils. *Subject Heading:* **Permeability.**

1–118 551.579:551.509.33

Bernard, Merrill, **Hydrometeorological services.** American Society of Civil Engineers, Proceedings, 75(3-part I.):375–377, March 1949. **DWB**—Possibilities of using statistical data now uncompiled in the Weather Bureau Archives as a basis for forecasting weather to help in planning operations of multiple use reservoirs. *Subject Headings:* **Hydrometeorology, Statistical forecasts.**

1–119 551.579

California Department of Public Works. Division of Water Resources, **Flood flows and stages in Sacramento and Northern San Joaquin Valleys.** 1946–1948. Sacramento, Sept. 1948. 186 p., 2 plates, 110 tables. **DWB**—Description of 109 stream gaging stations. Account of floods during period. Mostly tabular material. *Subject Headings:* **Hydrometeorology, Floods, California.**

1–120 551.579

Sohoni, V. V., **Hydrometeorology in India.** Journal of Scientific and Industrial Research, 7(5):222–227, May 1948. 2 figs. **DWB**—History of meteorological service in India and problems in hydrology affecting economy of India which hydrometeorological forecasts and records might solve. Discussion of hydrological cycle. Definition of hydrometeorology. 350 meteorological stations in India, but only 20 recording rain-gages. 3,000 rain-gages, or

1 to 500 sq. miles. Comparison with Tennessee Valley where 1 per 80 sq. mi. average. 40 to 50 evaporation stations for agro-meteorological work, same as rain gages. Snow surveys necessary, and Dr. Church of University of Nevada has made survey to determine needs for snow survey work. Stream gauging. *Subject Headings:* **Hydrometeorology, History, India.**

1–121 551.579:631.4:656

Kirkaldy, J. F., **Soil and weather.** Weather, 3(8):225–231, Aug. 1948. 2 figs., table. **DWB**—Semipopular discussion of soil-trafficability and the effect of weather thereon. Effect of evaporation, percolation, run-off, field capacity, etc. Use of traffic-ability or "going" maps for military purposes and possible adaptation to agricultural meteorology. *Subject Headings:* **Hydrometeorology, Soil trafficability.**

1–122 551.579.1:551.58:551.3(969)

White, Sidney, **Process of erosion of steep slopes of Oahu, Hawaii.** American Journal of Science, 247(3):168–186, Mar. 1949. 3 figs., 17 refs. **DWB**—Section on climate, p. 170–171. Rainfall chart p. 172. *Subject Headings:* **Soil erosion, Climatology, Hawaii.**

1–123 551.579.4

Craddock, George W., **Salt Lake City flood, 1945.** Utah, Academy of Science, Arts and Letters, Proceedings, **23**:51–61, 1946. **DLC—Destructive flood at Salt Lake City Aug. 19, 1945.** Maximum flow 4,000 cu. ft. per second per sq. mile. No previous flood in area during past 98 years. Flood caused by coincidence of high rainfall and impaired watershed. *Subject Headings:* **Floods, Utah.**

1–124 551.579.4:632

Lull, Howard W., **Watershed condition and flood potential.** Journal of Forestry, 47(1): 45–48, Jan. 1949. 2 figs., 8 refs. **DA, DLC**—A method of computing the expected runoff from a flood-producing storm on the Ephraim Creek Watershed is described in detail. Control measures needed to prevent such floods, are suggested. (Author's abstract). *Subject Headings:* **Floods, Runoff, United States.**

CLIMATOLOGY

Climates of Particular Places

1–125 551.582(492):551.525:551.524.37

*Braak, C., **Het klimaat van Nederland.** B (verfolg). **Grond temperatuur, minimum temperatuur nabij den grond en nachtvorst.** [The climate of Netherlands, B (cont'd), Ground temperature, minimum temperatures near the ground and night frost]. Nederlandsch Meteorologisch Instituut, No. 102, Mededeelingen en Verhandelingen No. 47. Rijksuitgeverij, s'Gravenhage, 1943. 40 p., 10 tables, in Dutch. **DWB**—Monthly and annual mean maximum and minimum temperatures at 10, 25, 50, 75 and 100 cm. below the surface and 10 cm. above the ground for years 1914–1942. Comparison with temperatures in shelter at 2.2 m. Relation of frost to surface and earth temperatures. *Subject Headings:* **Climatology, Earth temperature, Netherlands.**

1–126 551.582(492): 551.553

*Braak, C., **Het klimaat van Nederland.** D (verfolg). **Wind.** Nederlandsch Meteorologisch Instituut, No. 102. Mededeelingen en Verhandelingen No. 46, Rijksuitgeverij, s'Gravenhage 1942. 109 p., 8 figs., 22 tables, refs. In Dutch and English. **DWB**—Description of stations, instruments, reduction, methods of compilation. Average velocity at 5 principle stations, 4 coast and 15 other stations, and on lightships. Wind speeds by directions, frequency of speeds, relation of average speed to strongest gusts, gales, calms, diurnal variations, resultants, secular variations, tests on anemometers. Influence of wind on trees as means of estimate. *Subject Headings:* **Wind, Observatories, Netherlands.**

1–127 551.582(268):551.5:551.506.5

*†Fedorov, E. K., and Dzerdzeevskii, B. L., [Ekspeditsiia SSSR na Severnyĭ Polius, 1937]. **Trudy dreĭfuiushcheĭ stantsii "Severnyĭ Polius."** Vol. 2. **Nauchnye otchety i rezul'taty**

nabliudeniĭ dreĭfuiushcheĭ Ekspeditsii Glavsevmorputi 1937–1938gg. [Transactions of the drifting station "Severnyĭ Polius." Scientific account and results of observations on the drifting expedition of the Glavsevmorputi in 1937–1938]. Izdat. Glavsevmorputi, 1941–1945. **DLC**—Contents: (1) Fedorov, E. K., **Meteorologicheskie pribory i nabliudeniia** [Meteorological apparatus and observations], p. 5–30, 4 figs.+, 2 plates, 8 tables. (2) Dzerdzeevskii, B. L. **Meteorologicheskaia Sluzhba Ekspeditsii.** [Meteorological Service of the Expedition]. p. 31–63, 20 figs., 7 tables, 11 refs. Importance of meteorological service and reports to success of expedition. General character of weather in spring 1937, weather on the Moscow-Matochkin Shar sector, Matochkin Shar-Rudolf Island, airplane reconnaissance of weather. Ample illustrations with synoptic charts and data. (3) Dzerdzeevskii, B. L., **Tsirkuliatsiia Atmosfery v Tsentral'nom Poliarnom Basseĭne.** [Atmospheric circulation in the central polar basin]. p. 64–177, plates, 39 figs., 32 tables, 74 refs. Survey of literature dating back to Maury and Ferrel regarding circulation in Arctic. Summary of data on pressure from observations made on this expedition. Summary of temperature, wind, cloudiness, fog, etc. Cyclonic activity according to observations of expedition. Summary of synoptic conditions in polar basin as a result of flights in the Arctic. Examples of cyclonic activity in central polar basin (accompanied by charts). Circulation scheme. Each chapter summarized at end. Excellent bibliography arranged systematically. Reports from 18 flights given and illustrated by synoptic charts. Includes flight to USA from Moscow. (4) p. 187–397 contains tables of hourly or synoptic observations and various types of summaries. Not only 6 hourly observations are given, but notes as to weather between observations is given in detail. (5) p. 401–423 contains an album of clouds, consisting of 24 plates with cloud photographs. (6) p. 427–484 consists of 58 synoptic charts on color backgrounds. Mostly Northern Hemisphere analyzed charts, for 1937 and 1938. (In Russian). *Subject Headings:* **Climatology, Expeditions, Arctic.**

1–128 551.582(469)

*Ferreira, H. Amorim, **O Clima de Portugal,** Fasc. II., **Entre-Douro e Minho,** Lisbon, 1942, 25+ p., chart, 8+ tables. **DWB, MH-BH**—Climate of the region in north central Portugal lying between the rivers Douro and Minho. Discussion of topography, history of records, pressure, temperature, humidity, wind, cloudiness, insolation, evaporation; also tables of data by stations. Fasc. III., **Tras-os-Montes,** Lisbon, 1943, 30+ p., 10+ tables, fig. Local climatology similar to Fasc. II., but for a small mountainous region just east of the former. Fasc. IV., **Valores mensais e annuais dos elementos climaticos no periodo 1901–1930.** Lisbon, 1945, 180 p., tables and graphs + XV p. (text). Monthly and annual values for period established by the IMO (Warsaw, 1935) as the "reference," "normal" or "base line" period to which all climatological values should be referred: 1901–1930, for pressure, temperature, humidity, wind speed, cloudiness and precipitation for 18 stations in Portugal, presented in tables and graphs with descriptions of stations. Fasc. V., **Beira,** Lisbon, 1946. 32+ p., 25+ tables, chart. Another thorough climatology of a province of Portugal, lying just to the south of the regions covered by Fasc. II. and III. Fasc. VI., (in preparation as of 1946) is Climate of **Estremadura, Ribatejo and Alto-Alentejo.** *Subject Headings:* **Climatology, Portugal.**

1–129 551.582(439.1)

*†Hungary. Országos Meteorológiai és földmágnességi Intézet. **Magyarország Eghajlata-Das Klima von Ungarn.** [The climate of Hungary]. Part I. Berkes, Zoltán. **A légnyomás eloszlása magyarországon (1901–1930). Die verteilung des luftdruckes in Ungarn (1901–1930).** 60 p., 17 figs., 8 tables, 9 refs. **DWB**—Discussion, tables and charts of monthly mean pressure for 80 stations in Hungary. Monthly values for Budapest 1861–1940. Part II. Zách, István Alfréd. **A felhözet eloszlása Magyarországon (1901–1930). Die Bewölkung in Ungarn (1901–1930).** 18 figs., 23 tables, 52 refs. Discussion, tables and charts on daily and yearly variation in cloudiness, cloud regime in mountains and general distribution of cloudiness in Hungary. Data for 100 stations and monthly data from 1861–1940. Part III. Berkes, Zoltán. **A légnyomás változásai magyarországon (Napi, havi, évi menet és az évszázados változás). Die änderungen des luftdrucks in Ungarn (der tägliche, monatliche, jährliche gang und die säkulare änderung).** Budapest 1944, 10 figs., 28 tables, 16 refs. Daily, monthly and annual pressure changes and secular changes based on 130 years observations at

Budapest. Part IV. **Debracen Csapadékviszonvai, 1854–1943. Niederschlagsverhältnisse von Debrecen, 1854–1943.** Réthly, Antal, Budapest 1945. 120 p., 21 figs., 24 tables, refs. Precipitation in Debrecen. German summaries in each part. *Subject Headings:* **Cloudiness, Atmospheric pressure, Precipitation, Hungary.**

1–130 551.582(45)

*Italy, Servizio Idrografico, **Cenni di climatologia del Veneto,** quaderno primo, **Il clima di Venezia e Provincia.** [Notes on the climate of Venetia, part I, The climate of Venetia and Provincia]. Publ. N. 150, [Venice] 1947. 55 p., fig., 14 tables. **DWB**—Frequencies of temperature, precipitation, cloudiness, wind by direction and other climatic elements for the month and year with 25 pages of discussion of the various elements accompanied by brief tabular seasonal summaries. Complete data for Venezia, Chioggia, Stra, S. Dona di Piave and Portogruaro. (In Italian.) *Subject Headings:* **Climatology, Italy.**

1–131 551.582(493)

*Poncelet, L., and Martin, H., **Esquisse climatographique de la Belgique.** [Climatic sketch of Belgium]. Institut Royal Météorologique de Belgique, Mémoires, Brussels, V. 27, 1947. 265 p., 46 p. text and minor tables, 122 p., tables, 90 p. charts some in color, 96 stations used. In French. **DWB**—The first part contains generalizations such as method of selection of observations, homogenization of periods of observation, including statistical treatment, list of stations with coordinates and types of observation. Chap. II discusses critically the data used; temperature, humidity, pressure, wind, insolation, cloudiness, precipitation, thunderstorms, snow, hail, fog, soil temperature, including mention of instruments used, corrections applied, time of observation, etc. Chap. III contains discussion of tables, charts and graphs, and a comparison of the period 1901–1930 ("Normal Period" of the IMO used in their tables), with the period 1887–1946 at Uccle, showing that for temperature the difference is slight, but for rainfall considerable more variability occurs in the shorter period. Since no homogenous records exist in Belgium for the entire period, it is impossible to say if there has been any change in climate since 1887. A carefully organized and well balanced climatology, for an area of a size to be easily handled as a unit. *Subject Headings:* **Climatology, Belgium.**

1–132 551.582(439.)1:551.584

*Réthly, Antal, **Budapest éghajlata.** [The climate of Budapest]. Budapesti Központi Gyógy-és Üdülöhelyi Bizottság, (Central committee of the Budapest thermal baths and health resorts), Budapest, 1947. 147 p., 24 figs., 33+ tables, 124 refs. In Hungarian with English titles and summary. **DWB, MH-BH**—This work is not only a thorough climatology of a single city which is also a health resort, but a documentation of one of the longest and best meteorological records in the world. Monthly and annual mean temperatures are given from 1780 to 1947, and averages for each 20 years, for the "Normal Period (1901–1930)" and running 10 year averages are used both in tables and graphs to analyze the secular variation in temperature. Precipitation records date from 1841, pressure from 1809, cloudiness from 1861, and other elements from 1871 when the Hungarian Meteorological Service was established. Daily normals of pressure, temperature, cloudiness, humidity and precipitation are given for the period 1871–1945. In addition there are records from a network of stations within a radius of 10 miles having consistent records for 10 years thus making it possible to draw a chart showing the micro-variation in mean precipitation or the isohyets for an individual storm. One such cloudburst showed variation from 4.5" down, to 0 in a short distance. Frequency distributions, industrial applications and influences, etc. given. *Subject Headings:* **Climatology, Observational data, Budapest.**

1–133 551.582:(481)

*Spinnangr, Finn, and Eide, Odd., **On the climate of the lofty mountain regions of Southern Norway.** Meteorologiske Annaler, 2(13), Oslo, 1948. 66 tables, chart, refs. **DWB**—Discussion of exposures and equipment at 13 high level stations in Norway, together with tables of average climatological data for each station, and a comparison of the stations for various important elements, and comparison with 30 year normal period. Problems of forecasting for these mountain regions are also discussed. A chart shows the location of the sta-

tions in respect to topography. Valuable data on frequency of various wind directions and high wind forces, snow cover, sunshine, etc. *Subject Headings:* **Climatology, Norway.**

1–134 551.582.1(494)

*Bouët, Max, **Note sur le climat de Lavaux.** [Note on the climate of Lavaux]. Société Vaudois des Sciences Naturelles, Lausanne, Bulletin, 63(267):305–314, 1946. table, 8 refs. **MH-BH**—Discussion of location (near Lake Leman), temperature, radiation, humidity, cloudiness, insolation, wind, precipitation, thunderstorms. *Subject Headings:* **Climatology, Switzerland.**

1–135 551.582.1(98)

†Hobbs, William Herbert, **The climate of the Arctic as viewed by the explorer and the meteorologist.** Science, 108(2800): 193–201, Aug. 27, 1948. 33 refs. **DWB**—Lengthy discussion of past and present theories of pressure distribution and winds over the Arctic Basin and the Greenland Ice-cap. Mention is made of the various expeditions which have studied winds and pressure over the Arctic, especially Greenland. The bibliography gives a great many of the sources of information on this region, down to 1948. Whole discussion is in support of the "Glacial Anticyclone" theory in opposition to the idea of cyclones crossing the Greenland Ice-cap. *Subject Headings:* **Climatology, History, Arctic.**

1–136 551.582.1(581)

*Stenz, Edward, **The climate of Afghanistan, its aridity, dryness and divisions.** Polish Institute of Arts and Sciences in America, New York, 1946. 14 p., fig., 9 tables, 21 refs. **DWB**—From scanty climatic data, mostly from Kabul for 13 years, and partly from short records made at 9 other stations in Afghanistan (established between 1939 and 1943) and a few across the borders, the climatic conditions in regard to temperature, rainfall, precipitation variability, humidity, vapor pressure, aridity factor, saturation deficit, Gorczynski's definition of steppe and desert climates are interpreted for the whole earth and for Afghanistan in particular. Chart shows location of stations. *Subject Headings:* **Climatology, Afghanistan.**

1–137 551.582.2(41):551.515.7

Belasco, J. E., **The incidence of anticyclonic days and spells over the British Isles.** Weather, 3(8):233–242, Aug. 1948. 5 figs., 5 tables. **DWB**—Statistical study of frequency of quasi-stationary anticyclones during a 52 year period over Great Britain. Some interesting charts show maximum number of anticyclonic days in each month, frequency in each month with no anticyclonic days, means and maximum duration of such spells, frequency of intervals between such spells of 3, 7, 14 or 21 days duration, and probability that a period of a given number of unsettled or anticyclonic days will be followed by an anticyclonic day. Remarkable persistance. *Subject Headings:* **Climatology, Anticyclones, Great Britain.**

1–138 551.582.2(71)

*Boughner, C. C., and Thomas, M. K., **Climatic summaries for selected meteorological stations in Canada, Newfoundland and Labrador.** Vol. II. **Humidity, wind speed and direction.** Dept. of Transport, Meteorological Div., Toronto, May 1948. 88 p., 4 pages of text, 10 p., list of stations with location and brief description of station exposure. **DWB**—Tabular data comprises mixing ratio, relative humidity, dew point temperature, wind frequencies and average speeds by months for all provinces. Also isopleth charts for four seasons of mixing ratio, wind roses for winter and summer. *Subject Headings:* **Climatology, Humidity, Wind, Canada.**

1–139 551.582.3

Serra, Adalberto, **Atlas de Meteorologia, 1910–1934.** Servico de Meteorologia o Conselho Nacional de Geografia, Rio de Janeiro, 1946. 105 p., 312 charts of pressure, temperature and precipitation based on Reseau-Mondial data. **DWB**—Monthly means for northern and southern hemisphere for each element for Jan., April, July and Oct. 1910–34. Also normals for each of those months. Interval is 4 mm. for pressure, 5°C. for temperature and 100 mm. for precipitation. Temperatures are in degrees absolute. Introduction in Portuguese. *Subject Headings:* **Climatology, Atlases.**

Climatic Variations

1–140 551.583

Ahlmann, Hans W:son, **The present climatic fluctuation.** Geographical Journal 112(4–6): 165–195, Oct.–Dec. 1948. 8 figs., plates, 81 refs. **DLC, DWB**—In this interesting article, Prof. Ahlmann reviews some of the literature on the climatic variations in the northern hemispheric in historic and pre-historic times, as evidenced by changes in glaciers, bogs, lakes, rivers, tree-rings and living conditions. Then he presents the evidence of a marked climatic fluctuation in recent years, as represented by European geographers and meteorologists: Angström, Berg, Hesselberg, Keränen, Manley and Rubinshtein, reproducing many of their charts and graphs by way of illustration. Some authors have given an explanation of the present "warming of the Arctic" as resulting from an increase in the speed of the westerlies Brier, Kincer, Rubinshtein and others, while C. E. P. Brooks, Tannehill and Willett have gone back even farther, as did Clayton and many others, in an attempt to trace the cause to solar variations. Ahlmann then presents glaciological, oceanographical, biological and eustatic evidence of the change, followed by a summary of very recent evidence from Alaska and Iceland, and finally the economic effects, such as on fisheries in the North Atlantic and remarks on that and other phases of the subject by Gordon Manley, Woolridge and Schove. *Subject Headings:* **Climatic variations, Glaciation.**

1–141 551.583.13(45):551.577.33

*Boretti, Lodovico and DeAmicis, Valerio, **Analisi periodale della series pluviometrica di Genova.** [Periodic analysis of the Genoese precipitation series]. Geofisica Pura e Applicata, Milano, XII(5–6):261–285, 1948. 3 figs., 7 tables, 25 refs. In Italian with German, English and Italian abstracts. **DWB**—Using methods of Vercelli and Schuster the record from 1833 to 1947 at Genoa has been analyzed for periodicity and results compared with those for Trieste, Mantua, Padua and Florence. *Subject Headings:* **Rainfall, Periodicity, Italy.**

1–142 551.583.2:551.311.12

Ahlmann, Hans W:son, **Glaciological research on the North Atlantic coasts.** Royal Geographical Society, London, 1948. 83 p., 44 figs., tables, refs., index. **DWB**—Contents: The districts examined, accumulation, ablation, firn, and glaciation limits, the regime, the rate of movement, the classification of glaciers, variations of glacier margins and volumes and causes of such variations. Work done since 1918 in Greenland, Iceland, Spitzbergen, Norway and Lappland. Climatic fluctuations discussed on p. 75–78, including remarks on meteorological conditions resulting in changes. It is the belief of Ahlmann that the recession of glaciers in the North Atlantic Area in the last half century has been due to increased atmospheric circulation, bringing more warm air to the Arctic, rather than to increased radiation which would affect glaciers at high altitudes. *Subject Headings:* **Climatic variations, Glaciers, Arctic.**

Microclimatology

1–143 551.584:551.524.4

Baum, Werner A., **On the relation between mean temperature and height in the layer of air near the ground.** Ecology, 30(1): 104–107, Jan. 1949. 4 tables, 3 refs. **DA**—From 13 months data at Seabrook Farm, N. J., the author shows that the positive lapse rates during the day are not balanced by the negative lapse rates during the night, resulting in a positive mean lapse rate between 3″ and 6′ above the ground. This factor changes with the seasons, suggesting radiational cause. A similar test is being made at Anchorage, Alaska to establish the latitudinal factor which should be found if radiation is responsible. *Subject Headings:* **Microclimatology, Vertical temperature gradient, Inversions.**

1–144 551.584:551.524.4

Topol'nitskii, N. M., **Narushenie logarifmicheskogo zakona izmeneniia temperatury vozdukha s vysotoi.** [Violation of the logarithmic law of change of air temperature with height]. Akademiia Nauk, SSSR, Izvestiia, Ser. Geogr. i Geofiz., 13(1):70–73, 1949. 2 figs., 4 refs. **DLC, DWB**—Results of 2 years experimental observations on the vertical temperature gradient in the microclimatic layer up to 200 cm. over bogs, etc. Lapse rates illustrated for two types: micro-inversions, and formation of dew. In the second case super-adiabatic

rates were found in the first 5 cm. *Subject Headings:* **Microclimatology, Vertical temperature gradient.**

BIOCLIMATOLOGY—APPLIED METEOROLOGY

Agricultural Climatology

1–145 551.586:63(498)

Humlum, Johannes, **Zur geographie des maisbaus.** [On the geography of maize culture]. Einar Harcks Forlag, Copenhage, 1942. 317 p., maps, diagrs., illus., bibliog. **DLC**—The second part [which is the result of original research] deals primarily with the relation of Rumanian maize yields to climate. Weather is the dominant factor influencing annual variations in yield. Reviews work of Wallace, Kincer, Mattice, Visher, etc. [Climatic data restricted for Rumania. Used precipitation, mean temperature and possible monthly sunshine, for April–Oct. 300 stations in 49 provinces for rainfall, 70 stations for temperature, 2 stations for sunshine. Rainfall correlations calculated for each month. Correlation of May rainfall ranges from +.60 in one province to −.60 in another. July shows no area with negative correlation—the more rain the better. In May, June, and July eastern Rumania gets too little rain, while westward summer rainfall becomes less critical. Only in the mountains is temperature unfavorably low in all months. May is too cool in most parts and July, Aug., and Sept. too hot. A comparison of wheat with corn yields shows that a good corn year is a good wheat year. Review in Geographical Review, by George Carter, Oct. 1947, p. 693–6]. *Subject Headings:* **Bioclimatology, Agricultural meteorology, Rumania.**

1–146 551.586

Robinson, Willard B., **The effect of sunlight on the ascorbic acid content of strawberries.** Journal of Agricultural Research, 78:257–262, April 15, 1949. graphs, tables. **DWB**—Using 2 light recorders (modified Sprague-Williams) 5 miles apart with 9 varieties of strawberries at each location, the RCA 922 phototube with filters gave two peaks in maximum sensitivity curve about 4,000–6,000°A. It was found that amount of ascorbic acid in the ripe fruit appears to correspond to the amount of illumination on the 5th or 6th day prior to harvest. Differences in ascorbic acid content of strawberries on the fresh weight basis occurred at different locations with same illumination but the differences were not significant when ascorbic acid was expressed as dry weight of fruit. Used Student's paired difference method. *Subject Headings:* **Bioclimatology, Agricultural climatology.**

1–147 551.586:62

Toole, E. H., Toole, V. K., and Gorman, E. A., **Vegetable-seed storage as affected by temperature and relative humidity.** U. S. Dept. of Agriculture, Technical Bulletin No. 972, Oct. 1948. 24 p., 11 figs., 6 tables, 9 refs. **DA, DWB**—Effect of storage at different temperatures (70°F. and 80°F. with R.H. of 65, 73 and 80%, and at 50°F. with 50 and 80% R.H.) on 15 kinds of vegetable seeds. Natural storage in warehouse was also provided. Tomato most resistant to all kinds of conditions, and onion seeds most sensitive. Seeds sealed at various moisture contents exposed to open air. After 36 weeks storage none had decreased in germination at 50°F. and 50% R.H. while all kinds showed loss and nearly all complete loss of viability at 80°F. and 80% R.H. Responses variable. *Subject Headings:* **Bioclimatology, Agricultural climatology.**

1–148 551.586:632(714)

*Villeneuve, G. Oscar, **Climatic conditions in the province of Quebec and their relationship to the forests.** Province of Quebec, Dept. of Lands and Forests, Forest Protection Service, Meteorological Bureau, Bulletin No. 6, 1946. 144 p., 12 tables, 21 charts, bibliog. A dissertation presented to the faculty of the Graduate School of Yale University in candidacy for the degree of Doctor of Philosophy. **DA**—Climatic elements, particularly temperature and precipitation, are the primary controls of forest distribution in both the Tundra and the Hardwood Forest Regions of Quebec. The author has analyzed and presented meteorological data from observations made at more than 200 weather stations in Quebec. A brief review of the standard systems for classifying climate is followed by a discussion of forest and physiographic features of Quebec and then a more detailed discussion of climatic conditions in the province and in the various forest regions. Sources of data are described and methods of observation

of different weather elements discussed. Finally several pages are devoted to analysis of various pertinent climatic factors: temperature, precipitation, evaporation and P–E index. A chapter is devoted to the relationship between climatic and forest conditions in Quebec, by regions, appendix contains index of stations and climatic tables and charts of standard elements. *Subject Headings:* **Bioclimatology, Ecoclimatology, Forestry, Quebec.**

1–149 551.586:63:551.524.4

Waggoner, Paul E., **Temperature and height relations over bare ground and potato plots on peat and mineral soils.** Unpublished M. S. Thesis, Iowa State College, Ames, Iowa, 1949. **DWB**—Investigated the error involved in forecasting late blight (microclimatic temperatures) from macroclimatic temperatures, defined as the 60″ shelter height temperature. Described lapse rates as orthogonal comparisons of the temperature observed: $y = T_{\frac{1}{2}} - T_{60}$ and $z = T_{\frac{1}{2}} - 2T_{15} + T_{60}$. Proposed that a forecast of y and z be made from macroclimatic factors to give forecast of microclimatic temperatures. Difference in air mass, wind speed at 5 ft. and total sky cover offered no evidence of correlation with y or z. Time of day and day were influential in most lapse rates. The estimated difference among the temperatures at the 60, 15 and ½ inch heights were approximately equal to or less than 2°F. This was thought to be of little biological importance. Used 8 days in July 1948 at Crystal Lake, Iowa, 350 ft. square potato plots and 2 bare ground plots, one dark peat soil and the other a light mineral soil. No significant difference between different plots (plots are small and do not believe wind was considered so that would not expect much difference). Points out that by using his lower temperature observations in the laminar layer could have increased his difference to 2.5°F. on a clear night and 22°F. on a clear day (difference between laminar layer and 60″ height). Points out difference between exposed and shelter thermometer. More of a linear lapse rate found at night than in day. Presents statistical models for all comparisons. *Subject Headings:* **Agricultural climatology, Microclimatology, Vertical temperature gradient.**

1–150 551.586:58

Went, F. W., **Ecology of desert plants, I. Observations on germination in the Joshua Tree National Monument, California.** Ecology, 29:242–253, Dec. 1948. Went, F. W., **Ecology of desert plants, II. The effect of rain and temperature on germination and growth.** Ecology, 30(1):1–13, Jan. 1949. 7 figs., 7 tables, 5 refs. Went, F. W., and Westergaard, M., III. **Development of plants in the Death Valley National Monument, California.** Ecology, 30(1): 26–38 Jan. 1949. 6 figs., 2 tables, 4 refs. **DA**—Experiments on germination of desert plants under controlled conditions, shows that artificial rain promotes germination only temperatures following the rain are high for summer types and low for winter types. Summer types do best at 27°C. day and 26°C. night temperature, while winter types germinated when day temperatures were 18°C. and night 8°–13°C. Field observations were made in Death Valley where there are no summer plants, to test results of controlled experiments. *Subject Headings:* **Applied bioclimatology, Ecoclimatology.**

Upper Air Climatology

1–151 551.587(744)

*Haurwitz, B., and Haurwitz, E., **Pressure and temperature variations in the free atmosphere over Boston.** Harvard Meteorological Studies, No. 3, Cambridge, Mass., 1939. 74 p., 23 figs., 20 tables, 34 refs. **DWB**—Radiosonde observations made at Boston in 1937 and 1938 analyzed to determine pressure and temperature variations in the various layers up to 16 km., remains constant from 3 to 6 km., increases to maximum at 9–10 km., then falls off above 15 km. Algebraic means of variability compared to absolute values. Chapter II develops the theory of statistical correlation coefficients, correlation ratios and regression equations. Chapter III is entitled troposperic pressure and temperature variations during the passage of isallobaric centers. Chapter IV, the advective changes of mass in the different layers and their effect on the surface pressure variations. Chapter V., summary. *Subject Headings:* **Upper air climatology, Massachusetts, Boston.**

1–152 551.587:551.506.7

*Henry, T. J. G., and Armstrong, G. R., **Aerological data for Northern Canada.** Dept. of Transport, Meteorological Div., Toronto, May 1949. 271 p., figs., tables, color charts, 20 refs. **DWB**—Upper wind frequencies average upper-air temperature, pressure and humidity data. Surface climatic data for selected stations. Normal isobaric charts. Station location chart for Northern Canada. Length of record tabulated for each station. Discussion of all phases of upper air climatology in Canada. *Subject Headings:* **Upper air climatology, Canada, Arctic.**

1–153 551.587:551.513.7

Schneider-Carius, Karl, **Die schichtung der troposphäre über dem tropischen östafrika.** [The stratification of the troposphere over tropical East Africa]. Geofisica Pura e Applicata, Milano, XII(5–6):254–260, 1948. 6 tables, 5 refs. In German with English and German summaries. **DWB, MH-BH**—Uniform conditions in troposphere. "Peplopause" occurs at 3 to 4 kms. during dry season, with slight interdiurnal variability. Vertical temperature conditions over Lake Victoria; in the Equatorial Coastal Zone; circulation system on the Somali-coast, conditions during northeast and southwest monsoons. *Subject Headings:* **Upper air climatology, Trade-winds.**

MISCELLANEOUS APPLICATIONS

Optical Phenomena

1–154 551.591.1

Lamar, Edward S.; Hecht, Selig, Hendley, Charles D.; and Shlaer, Simon, **Size, shape and contrast in detection of targets by daylight vision. II. Frequency of seeing and the quantum theory of cone vision.** Optical Society of America, Journal, 38(9):741–755, Sept. 1948. 18 figs., 3 tables, 7 refs. **DWB**—Frequency of seeing; usual flux of the retinal image; probability of seeing and perimeter; meaning of a single exposure, probability theory and Poisson's Law, foveal cone vision and probability; number of cones and frequency of seeing; threshold contrast and the "Noise Level"; brightness and the number of quanta. *Subject Heading:* **Visibility.**

1–155 551.591.1

Higgins, G. C., and Stulz, K., **Visual acuity as measured with various orientations of a parallel-line test object.** Optical Society of America, Journal, 38(9):756–758, Sept. 1948. fig., 2 tables. **DWB**—*Subject Heading:* **Visibility.**

1–156 551.593.11:551.584

Ives, Ronald L., **Meteorological conditions accompanying mirages in the Salt Lake desert.** Journal of the Franklin Institute, 245(6):457–473, June 1948. 9 figs., 11 refs. **DWB**—Discussion of micrometeorological and climatic conditions including lapse-rates, visibility, topography, etc. Instrument used for recoding lapse-rate between 25 cm. and 2 m. above ground directly. Inferior mirage the most common type; inversion mirages, superior mirages and other more rare types mentioned. Illustrated by photographs and instrumental records. Various types of mirage usually accompanied by specific meteorological conditions which are predictable. Mirages may be disturbed or temporarily broken up by dust devils, explosions or vehicular movements. Hazard to aviation and deceptive for military movements at times. *Subject Headings:* **Mirage, Microclimatology.**

1–157 551.593.5

Rozenberg, G. V., **Poliarizatsiia vtorichno rasseiannogo sveta v sluchae molekuliarnogo rasseianiia.** [Polarization of secondary scattered light in the case of molecular scattering]. Akademiia Nauk, SSSR, Izvestiia, Ser. Geogr. i Geofiz., 13(2):154–161, 1949. 8 refs., 25 equations. **DWB**—Study of daylight and twilight scattering of sunlight in the zenith direction due to molecular scattering indicates that much multiple scattering is fairly great, reaching a value with a solar angle of 90° of 0.5 to 0.7. Polarization anomaly in twilight can not be explained as due to secondary scattering if the latter is of molecular character. *Subject Headings:* **Polarization, Scattering, Twilight.**

1–158 551.593.55:551.510.53

Shtaude, N. M., **Vtorichnoe rasseianie vo vremia sumerek pri raznykh stroeniiakh atmosfery.** [Secondary scattering at time of twilight with various conditions of the atmosphere]. Akademiia Nauk, SSSR, Doklady, 64(6):819–822, 1949. 2 figs., 2 tables, 6 refs., equation. **DWB**—Temperatures to 160 km. obtained by method of zenith twilight intensity observations given here, though comparable, lower than those obtained by two other methods. Northern lights and ionospheric observations. *Subject Headings:* **Twilight, Upper atmosphere, Scattering.**

1–159 551.593.9:534:551.591.1:551.596.1

Schmauss, A., **Sichtbare druckwellen.** [Visible pressure waves]. Zeitschrift für Meteorologie, 1(1):2–14, 1946. **DWB**—Pressure and sound waves visible in the sky as bright and dark rings and stripes, were observed in Germany during the First World War, and again in 1942–3–4. The waves originated in artillery, flack, incendiary bombs and other explosions. A number of accounts of actual cases of this kind observed by meteorologists, together with the accompanying meteorological conditions, are cited for each type of disturbance which would produce pressure waves. Among these are accounts of pressure waves from planes in flight. The thermodynamic theory, the optical theory, the method of formation of the clouds which accompany the waves and the oscillations of ice crystals, etc., in the field of gravity. The presence of clouds is not necessary, but increases the possibility of viewing the phenomenon. *Subject Headings:* **Optical phenomena, Acoustical phenomena, Visibility.**

Acoustical Phenomena

1–160 551.596.1

Arabadzhi, V. I., **O zatukhanii zvuka v atmosfere.** [On damping of sounds in the atmosphere]. Akademiia Nauk, SSSR, Izvestiia, Ser. Geogr. i Geofiz., 13(2):162–164, 1949. 4 refs., 12 equations. **DWB**—Consideration of the damping of sound due to temperature variations in the lower layers of the atmosphere. Obtained for the coefficient of damping a quantity close to the empirical results of Sieg for still air. *Subject Heading:* **Acoustical phenomena.**

1–161 551.596.1

Cox, Everett F., **Microbarometric pressures from large high explosive blasts.** Acoustical Society of America, Journal, 19(5): 832–846, Sept. 1947. 14 figs., 2 tables, 28 refs. **DLC**—Discussion of measurements of anomalous and normal pressure waves produced by blasts made near Arco, Idaho during Oct. 1946, and recorded on microbarographs at distances from 13 to 452 km., (in various parts of the Northwest, including one record made near Seattle, Washington). Equipment described and illustrated. Calibration of equipment. Theoretical and empirical aspects of time-measurements. Analysis of abnormal signal arrival times, and normal and abnormal signal strengths, frequencies and durations. At the time this article was written, abnormal sound measurements provided the only method of temperature measurement in the 30 to 60 km. portion of the stratosphere. Appendix gives by means of 14 equations, the calculation formulaes used. The author concludes that abnormal audibility is not a shock-wave phenomenon. *Subject Heading:* **Acoustical phenomena.**

Electrical Phenomena

1–162 551.594:551.508.94

Burkhart, Kurt, **Luftelektrische Feldmessungen mit Elektrometerröhren.** [Field measurements of atmospheric electricity by means of electrometer valves]. Zeitschrift für Meteorologie, 1(7):212–213, April 1947. fig. **DWB**—*Subject Heading:* **Atmospheric electricity.**

1–163 551.594.11:551.551

Tverskoi, P. N., and Timofeev, M. P., **Turbulentnost' i vertikal'nyi profil' napriazhennosti electricheskogo polia v nizhnem sloe atmosfery.** [Turbulence and the vertical potential gradient in the lower layers of the atmosphere]. Akademiia Nauk, SSSR, Izvestiia, Ser. Geogr. i Geofiz., 12(5): 377–386, 1948. 3 figs., 5 tables, 6 refs., 18 equations. **DLC**—As-

uming that the potential gradient varies linearly with height, it is shown that the conductivity loes not change with height. Introducing refinements into Whipple's formula for the case f uniform turbulence (with height), the role of turbulence in the vertical distribution of otential gradient is developed, and future lines of investigation outlined. (Paper in Russian ith Russian abstract). Abstract p. 377. *Subject Headings:* **Atmospheric electricity, Turulence.**

1–164 551.594.11

Rouch, Jules, **Observations du champ electrique de l'atmosphere pendant l'eclipse de oleil du 28 avril 1949.** [Observations of the electric field of the atmosphere during the eclipse f the sun on April 28, 1949]. Académie des Sciences, Paris, Comptes Rendus, 228(20):1547–1549, May 16, 1949. fig., refs. **DWB**—During the 1949 eclipse, as during that of April 8, 1921, the author observed a very strong electric field, exceeding during the total eclipse the naximum observed for the rest of the current month. *Subject Headings:* **Atmospheric lectricity, Eclipses.**

1–165 551.594.2

Rivault, René, **Origine de certaines formes d'atmosphériques.** [Origin of certain forms f atmospherics]. Académie des Sciences, Paris, Comptes Rendus, 226(16):1300–1302, April 9, 1948. **DWB**—*Subject Heading:* **Atmospheric electricity.**

1–166 551.594.21

Tverskoi, P. N., **Grozovoe elektrichestvo i sokhranenie otritsatel'nogo zariada zemli.** Thunderstorm electricity and conservation of the negative charge on the earth]. Leninradskoe Universitet, Vestnik, 6:3–24, June 1947. 10 figs., 51 refs. **DLC**—General haracter of the electric field in the atmosphere; conservation of the negative charge on the round; daily variation in potential gradient; thunderstorm activity and constitution of the nosphere; direction of lightning stroke current and polarity of thundercloud; causes of rmation of cloud charges and forces conditioning their separation; conclusions. Bibliography ncludes material through 1945 and one for 1947. *Subject Heading:* **Thunderstorm electricity.**

1–167 551.594.21:629.13

Gunn, Ross, **Electric field intensity inside of natural clouds.** Journal of Applied Physics, 9(5):481–4, May 1948. 2 figs., 6 refs. **DWB**—Measurements of the electric field on the rface of aircraft flying thru all types of weather and clouds are summarized. The measured ectric field inside a thunderstorm just prior to a stroke at 12,900 ft. was 3,400 volts per cm. t is noted that large fields usually occur only inside the cloud and at altitudes somewhat comarable to the freezing level. Frequent reversals of the field are observed in these areas. he electric field measured inside a stable non-precipitating cloud is less than 10 volts per cm. uthor Abstract. *Subject Headings:* **Thunderstorm electricity, Aeronautics, Cloud structure.**

1–168 551.594.221

Loeb, Leonard B., **The mechanism of lightning discharge.** Journal of Franklin Institute, 46(2): 123–148, Aug. 1948. 21 figs., 42 refs. **DWB**—Survey of knowledge on lightning rokes gained by use of revolving cameras, ionization measurements, etc. Well illustrated nd annotated. *Subject Heading:* **Lightning.**

1–169 551.594.25:551.515.4

Gunn, Ross, **The electrical charge on precipitation at various altitudes and its relation to hunderstorms.** The Physical Review, 71(3):181–186, Feb. 1, 1947. 5 figs. **DWB**—By eans of instruments installed on a "Flying Fortress," free electrical charges on individual recipitation particles were measured at various altitudes up to 26,000 feet by an induction ethod that avoided touching them. In a weak cold front with no thunderstorms activity, nd with the freezing level at 11,000 ft., positive charges alone were observed from 20–26 housand feet, negative charges alone from the surface up to 10,000 ft. and both types of harges from 10,000 to 20,000 ft. Electric field measurements on the airplane showed that the article charges were largely neutralized by nearby charges, either in the air or on the cloud roplets. Removal of this neutralizing charge will immediately produce thunderstorm electric

fields and potentials. Charts show the measured electric fields on B–25 before and after i was struck by lightning at 13,000 ft. on Aug. 15, 1944. Such strokes are thought to resul from a redistribution of electric charge when vertical air currents separate the neutralizin positive and negative charges. *Subject Headings:* **Atmospheric electricity, Thunderstorms.**

1–170 551.594.2

Reynolds, S. E., and Workman, E. J., **Electrical charge separation produced by rapi freezing of rain-water.** Note in Physical Review, 75(2):347–8, Jan. 15, 1949. **DWB**— *Subject Heading:* **Electricity of precipitation.**

1–171 551.594.2

Simpson, G. C., **Atmospheric electricity during disturbed weather.** Terrestrial Magnetism and Atmospheric Electricity, 53(1):27–33, March 1948. 6 figs. **DWB**—Conclusions reache in a study conducted at Kew Observatory, England, from Oct. 1942 to May 1946 with specia reference to electricity carried on rain and snow. Eventually this material will be publishe in Geophysical Memoir No. 84, by the Air Ministry, Meteorological Office. A few of th many conclusions are: during fine weather the potential-gradient is positive with only smal regular changes. If during rainfall the potential-gradient is negative without rapid variations the rainfall is associated with a warm front, an occlusion or a cloud sheet not connected wit a discontinuity. Steady light snowfall does not disturb normal positive potential-gradient Negative potential-gradients almost never occur with snow at sub-freezing temperatures Large and rapid changes in potential-gradient, with fluctuation from negative to positive an vice-versa are usually associated with cold fronts with local ascending air currents (showers) Changes in gradient are not closely associated with either intensity or variations in rainfall Both the character of the gradient and character of rainfall are governed by character of th air motion in the atmosphere. Both are effects of air-motion. *Subject Heading:* **Atmospheri electricity.**

1–172 551.594.6:551.590.2:551.510.53

Martyn, D. F., **Atmospheric tides in the ionosphere, III. Lunar tidal variations a Canberra.** Royal Society of London, Proceedings, Ser. A. 194(1039):429–444, Nov. 9, 1948 11 figs., 8 tables, refs. **DWB**—IV. **Studies of the solar tide, and the location of the region producing the diurnal magnetic variations.** 194(1039):445–463, Nov. 9, 1948. 10 figs., tables refs. Abstracts with each article. *Subject Headings:* **Spherics, Cosmic influences, Ionosphere**

Radio Meteorology

1–173 551.594.6:551.590.2

Appleton, Sir Edward, and Naismith, R., **The radio detection of meteor trails and allie phenomena.** Physical Society of London, Proceedings, 59, 3(333):461–473, May 1, 1947 10 figs., 3 plates, ref., discussion. **DLC**—Results of radio (echo) soundings on Giacobini meteor shower of Oct. 10, 1946. Confirm that ionization bursts observable at all hours of day are due to sporadic meteors. E-layer ionization (sporadic) in temperate latitude due to same cause. *Subject Heading:* **Electrical phenomena.**

1–174 551.594.6(96

Ellyett, C. D., **Echoes at D-Heights with special reference to the Pacific Islands.** Terrestrial Magnetism and Atmospheric Electricity, 52(1):1–13, March 1947. 3 figs., 2 tables **DWB**—Radio echoes from a height of 50 km. above Pitcairn Island. 1,302 observations taken between Oct. 1, 1944 and Nov. 16, 1945. Occurrence during 65% of all daytime observations though night occurrence not excluded. Both a summer and winter minimum of activity. Similar echoes at Raoul Island and Christmas (June 11–30, 1945). It is considered that the echoes may be characteristic of a tropical region. *Subject Headings:* **Spherics, Pacific Islands.**

1–175 551.594.6:551.594.5

Herlofson, N., **Interpretation of radio echoes from polar auroras.** Nature, 160(4077):867– 8, Dec. 20, 1947. **DWB**—Discussion of article by Lovell, Clegg, and Ellyett (Nature 160, 372, 1947). *Subject Headings:* **Spherics, Aurora.**

1–176 551.594.6:551.5:621.396

Smith-Rose, R. L., **Meteorology and the propagation of radio waves.** Nature, London, 161(4082):145–146, Jan. 24, 1948. **DWB**—Review of work done during war, especially reports prepared for general distribution after the war, on determination of the effect of various weather conditions on radio and radar propagation. *Subject Headings:* **Spherics, Radio communication.**

1–177 551.594.6:551.5:621.396

Krasil'nikov, V. A., **O vliianii pul'satsii koeffitsienta prelomleniia v atmosfere na rasprostranenie ul'trakorotkikh radiovoln.** [On the influence of pulsations of the index of refraction in the atmosphere on the propagation of ultra-short radio waves]. Akademiia Nauk, SSSR, Izvestiia, Ser. Geogr. i Geofiz., 13(1):33–57, 1949. 7 figs., table, 16 refs., 60+ equations. **DWB, DLC**—Fluctuations in the index of refraction of the atmosphere, due to temperature pulsations, causing fluctuations in signal strength, phase, etc., (fading) of high frequency radio waves, both up to and beyond the horizon. Comparison of theory with experimental results. *Subject Headings:* **Spherics, Radio communication.**

PART II. CUMULATIVE ANNOTATED BIBLIOGRAPHY ON ATMOSPHERIC POLLUTION BY SMOKE AND GASES (U.D.C.: 551.510.42)

By: *Harris P. Kramer* and *Malcolm Rigby*

Note: This is the first of a series of special **Cumulative Bibliographies** on subjects of immediate interest to large numbers of meteorologists. Owing to the vast amount of material which has been written on any given subject, and to limited space which can be devoted to publishing such bibliographies, it is impossible to make them either exhaustive or all-inclusive. So the field of each bibliography must be very restricted, and in spite of the fact that older material is often more worth while than more recent contributions, emphasis must be placed on current works. Otherwise decisions as to inclusion or exclusion of an item were based on the possible usefulness of that item to a meteorologist who is working in either theoretical or applied meteorology, climatology, or forecasting.

The arrangement of material in this bibliography is semi-chronological. First are listed a few **bibliographies** which contain numerous references to **atmospheric pollution.** The second section is devoted to **periodicals** which regularly contain articles on **atmospheric pollution.** Then there appear entries of five items published between **1661** and **1896,** arranged chronologically. The rest of the bibliography (A–15 to A–240) is arranged alphabetically by author within the following respective time periods: **1900–1919, 1920–1929, 1930–1935, 1936–1939, 1940–1944, 1945, 1946, 1947, 1948** and **1949.** Thus if a reader wishes to trace the evolution or development of the subject he can begin with the earlier works and gain an historical perspective. On the other hand if he is already familiar with earlier works, or is only interested in recent material which he may have overlooked, he can concentrate on the more recent or current literature. Furthermore, when consulting the index it can be roughly assumed that every item with a higher number than A–100 was published since **1939,** above A–150 since **1945,** and above A–200 since January **1948.**

As is invariably the case after a bibliography has been completed and indexed, a number of important or recent items are discovered. When such items cannot be added without disrupting the printing schedule, they will be kept on file for future reference and to enable the Society to issue special supplements to these bibliographies when such efforts are justified. It will be appreciated, then, if the readers will send in (on a 3″ x 5″ card if practicable) references to any such items which have been overlooked or which appear after the issue has been closed.

The outline which follows and the Subject Headings appearing after each item will help the reader identify material on narrow fields of the subject of **Atmospheric Pollution,** or on related fields of interest.

The 240 items included in this bibliography have been selected from over 400 references on various phases of **Atmospheric Pollution** and **Smoke Abatement** obtained after an extensive search of the following libraries in Washington, D. C.

DA: U. S. Department of Agriculture Library
DBS: National Bureau of Standards Library
DGS: Geological Survey Library (U. S. Department of Interior)
DLC: Library of Congress
DM: Bureau of Mines Library (U. S. Department of Interior)
DSG: U. S. Army Medical Library
DWB: U. S. Weather Bureau Library

Each entry has been actually located and checked, except in the few cases otherwise designated.

The language of the article will in most cases be the language of the title. Exceptions are properly noted.

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1882

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1896

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A–66 Barkley, J. F., **Some fundamentals of smoke abatement,** U. S. Bureau of Mines Information Circular, 7090. Washington, D. C., **1939.** 59 p., bibliog., tables. **DLC**—Summary tables of compilation of answers to questionnaires distributed to many American cities, including data on population, area, and coal burning industries. Other tables review work of cities on smoke abatement. *Subject Headings:* **Atmospheric pollution, Smoke abatement.**

A–67 Barrett, H. M., **Atmospheric pollution in Toronto, Canada.** Canadian Public Health Journal, 29:1–12, **1938.** 5 figs., 4 tables, 12 refs. **DSG**—Measurement given for years 1933-36 using a British method. Results tabulated and discussed. *Subject Headings:* **Atmospheric pollution, Toronto, Canada.**

A–68 Bosanquet, C. H., and Pearson, J. L., **The spread of smoke and gases from chimneys.** Faraday Society, Transactions, 32:1249–64, Aug. **1936.** fig., 23 equations. **DLC**—A theory has been developed by dimensional analysis for calculating the spreading of a smoke cloud from a chimney, and results have been shown to agree reasonably well with experiment. A formula is given for the concentration at all distances from the chimney foot. *Subject Headings:* **Atmospheric pollution, Disperse systems.** (See also Faraday Society, 1936).

A–69 Brandt, O., and Hiedemann, E., **The aggregation of suspended particles in gases by sonic and supersonic waves.** Faraday Society, Transactions, 32:1101–1110, Aug. **1936.** 14 figs., 2 tables, refs., 8 equations, 4 p. **DLC**—Process of rapid coagulation by sonic and supersonic waves studied. Detailed information given about the effect of the sound on the disperse system. No complete theory of the process yet given. *Subject Headings:* **Atmospheric pollution, Disperse systems.** (See also: Faraday Society, 1936).

†A–70 Burckhardt, Hans, and Flohn, Hermann, **Die atmosphärischen Kondensationskerne; in ihrer physikalischen, meteorologischen und bioklimatischen Bedeutung.** [Atmospheric condensation nuclei; their physical, meteorological and bioclimatological significance]. Berlin, Julius Springer, **1939.** 128 p., 23 figs., 34 tables, extensive refs. **DLC**—Thorough scientific treatment of subject on important work. *Subject Headings:* **Atmospheric pollution, Condensation nuclei.**

A–71 Cawood, W., **The movement of dust or smoke particles in a temperature gradient.** Faraday Society, Transactions, 32:1068–1073, Aug. **1936.** 5 equations. **DLC**—The existence of a dark space around a hot body in smoke or dust is examined through consideration of the mechanism of the conduction of heat from solid bodies to gases. A force tends to move small particles down a temperature gradient. Various formulae computed. *Subject Headings:* **Atmospheric pollution, Disperse systems.** (See also: Faraday Society, 1936).

A–72 Cincinnati, Junior Chamber of Commerce, **Smoke over Cincinnati; a smoke abatement survey with recommendations. 1938.** 47 p. **DLC**—A non-technical report on Cincinnati's smoke problem considered from angles of health, meteorology, ordinance, laws, etc. *Subject Headings:* **Atmospheric pollution, Cincinnati, Ohio.**

A–73 Coste, J. H., and Courtier, G. B., **Sulphuric acid as a disperse phase in town air.** Faraday Society, Transactions, 32:1198–1202, Aug. **1936.** refs. **DLC**—Method of investigating sulphuric acid content of air devised, not involving use of filters. Free sulphuric acid content of London air given. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Sulphur compounds, Disperse systems.** (See also: Faraday Society, 1936).

A–74 Dmitriev, N. Z., **Novyĭ pribor dlia issledovaniia zapriazneniĭ v atmosfere.** [New apparatus for determining pollution of the air]. Gigiena i sanitaria, U.S.S.R., 4(7):36–9, **1939.** fig. **DLC**—*Subject Headings:* **Atmospheric pollution, Instruments.**

A–75 Dobson, G. M. B., Introductory paper: **The general properties and behaviours of disperse systems consisting of aqueous and other volatile particles, i.e., mist, cloud, hygroscopic nuclei, town and country fogs.** Faraday Society, Transactions, 32:1149–1152, Aug. **1936. DLC**—Meteorological aspects of dust, smoke and fog. Hygroscopic particles discussed. *Subject Headings:* **Atmospheric pollution, Disperse systems, Weather conditions.** (See also: Faraday Society, 1936).

A–76 Drinker, Philip, **Atmospheric pollution.** Industrial and Engineering Chemistry, 31:1316–1320, Nov. **1939.** (Chemical Abstracts, 34:561). 4 figs., table, 20 refs. Examples of various types of contaminants are given with methods for estimating and controlling them. Discussed are: measurement problems, gases, industrial mists and fogs, natural fogs, dust and fumes, airborne diseases, and air-conditioning. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Public health.**

A–77 Fairhall, L. T., **Toxic dusts and fumes.** Journal of Industrial Hygiene and Toxicology, 18(9):668–80, **1936.** 49 refs. A comprehensive article treating various toxic substances individually; explaining how these dusts are collected and analyzed; toxicity evaluated; human reactions. *Subject Headings:* **Atmospheric pollution, Public health.**

A–78 Faraday Society, **Disperse systems in gases; dust, smoke and fog; 64th general discussion of the Faraday Society, University of Leeds.** Faraday Society, Transactions, 32, part 8:1041–1300, Aug. **1936. DLC**—A collection of 38 important scientific papers, mostly theoretical, arranged according to the following general scheme: Part I: a) The general properties of disperse systems composed of solid and liquid non-volatile particles, i.e., smoke, dust, oil, fogs, etc.; b) The general properties and behaviour of disperse systems consisting of aqueous and other volatile particles, i.e., mist cloud, hygroscopic nuclei, town and country fogs. Part II: The industrial aspects of disperse systems in air and gases. A few representative articles have been listed herewith by author: Bosanquet, C. H.; Brandt, O.; Cawood, W.; Coste, J. H.; Dobson, G. M. B.; Firket, J.; Meldau, Robert; Nolan, J. J.; Owens, J. S.; Patterson, H. S.; Whipple, F. J. W.; Whytlaw-Gray, R. *Subject Headings:* **Atmospheric pollution, Disperse systems.**

A–79 Firket, J., **Fog along the Meuse valley.** Faraday Society, Transactions, 32:1192–1197, Aug. **1936.** Medical observations, meteorological conditions, chemical analyses, of Meuse smoke-fog disaster, 1930. *Subject Headings:* **Atmospheric pollution, Meuse, Belgium.**

A–80 Glawion, H., **Staub und Staubfalle in Arosa.** [Dust and dust fall in Arosa]. Beiträge zur Physik der freien Atmosphäre, Leipzig, 25:1–43, **1938.** 16 figs., 15 tables, 38 refs. **DWB, DLC**—Fundamental treatise of many aspects of atmospheric dust. *Subject Headings:* **Atmospheric pollution, Dust, Arosa, Switzerland.**

A–81 Great Britain, National Smoke Abatement Society, **Smoke abatement exhibition 1936.** Handbook and guide. 80 p. **DLC**—Contents of significance (by author and title): des Voeux, H. A., **A review of the smoke abatement movement;** Gandy, Charles, **The law relating to smoke;** Beaumont, John W., **Smoke abatement and local government;** Owens, J. S., **Methods for the measurement of atmospheric pollution by smoke;** Department of Scientific and Industrial Research, **Atmospheric pollution produced by the combustion of coal;** Langrische, J. du F., **Smoke and health;** Warnes, Arthur C., **Effects of smoke and atmospheric deposits on stone;** Ruston, A. G., **The effects of smoke on vegetation;** Schofield, H. M., **Smoke and aviation;** Fitzgerald, Marion, **The domestic smoke problem with special reference to new housing estates;**—The problem in other countries. *Subject Headings:* **Atmospheric pollution, Smoke abatement.**

A–82 Herring, H., **Die staubverteilung in Marburg a.d. Lahn. Eine Lufthygienische Studie.** [Dust diffusion in Marburg on the Lahn; a study in air hygiene]. Bioklimatische Beiblätter der Meteorologischen Zeitschrift, Brunswick, 5:49–57, **1938,** 9 figs., 20 refs. **DWB**—*Subject Headings:* **Atmospheric Pollution, Public health, Germany.**

A–83 Humery, M. R., **Malgré de sévères mésures l'atmosphère des cités est de plus en plus polluée.** [In spite of severe measures city atmospheres get more and more polluted]. Revue d'hygiene et de médecine sociales, 17:65–71, Jan. **1938.** Situation, sources, discussed. Recommendations for combatting pollution: conclusions of the conference internationale de l'Union internationale des Villes, Paris, 1937: meteorologists should survey and report climatic alteration of big cities under the influence of smoke; and above all measure the intensity of ultraviolet light. **DSG**—*Subject Headings:* **Atmospheric pollution, Public health.**

A–84 Ives, J. E., **City smoke and its effects.** U. S. Public Health Service, Reprint No. 1726, Washington, D. C., **1936.** 4 p., 2 tables. **DSG**—Various economic losses due to smoke estimated and briefly discussed. *Subject Heading:* **Atmospheric pollution.**

A–85 Kahler, K., and Brandtner, G., **Messungen des Staubgehalts der Luft in Bad Tolz.** [Measurement of dust content of the air in Bad Tolz]. Bioklimatische Beiblatter der Meteorologischen Zeitschrift, Brunswick, 5:58–62, **1938.** 2 tables. **DWB**—*Subject Headings:* **Atmospheric pollution.**

A–86 Kaliuzhny, D. N., **O podgotovke kadrov po sanitarnoĭ okhrane atmosfernogo vozdukha.** [Plans for sanitary protection of the air]. Gigiena i Sanitaria, U. S. S. R., 4(6):18–24, **1939.** 3 figs., refs. *Subject Headings:* **Atmospheric pollution, Public health.**

A–87 Lamb, H. H., **Industrial smoke drift and weather.** Royal Meteorological Society Quarterly Journal, 64(277):639–643. Oct. **1938.** illus. Detailed observation in southern Scotland on drift from Glasgow area. Spread, height, topographical barriers, weather conditions. *Subject Headings:* **Atmospheric pollution, Weather conditions, Scotland.**

*†A–88 Landsberg, H., **Atmospheric condensation nuclei.** Ergebnisse der Kosmischen Physik, 3:155–252, **1938.** 16 figs., 26 tables, 227 refs., 59 equations. **DLC**—Appendix of tables of nuclear concentrations in various continental and oceanic areas. A highly technical and comprehensive treatment of the subject, including detailed diagrams, charts, and tables. The importance of the study of condensation nuclei to the meteorologist is emphasized. Excellent bibliography. *Subject Headings:* **Atmospheric pollution, Condensation nuclei.**

A–89 Lejay, Pierre, **Méthode de calcul des cöefficients caracterisant le trouble atmosphéric; variations de ce trouble au voisinage de Shanghai.** [Study of atmospheric turbidity; vicinity of Shanghai]. Académie des Sciences, Paris, Comptes Rendus, 207:439, Aug. 29, **1938.**—Highly technical article giving equations for measurement of particles in the air and their effect on light absorption in the atmosphere. Ångström's theory discussed. *Subject Headings:* **Atmospheric pollution, Light, Shanghai.**

A–90 Löbner, Alfred, **Vergleichende untersuchungen über den Staubgehalt der Grossstadluft im Winter und Sommer.** [Comparative data on dust content of city air in winter and summer]. Kleine Mitteilungen für die Mitglieder des Vereins Wasser-, Boden-, und Lufthygiene E. V., 13: 181–200, June–Aug. **1937.** figs., tables, refs. **DWB**—*Subject Headings:* **Atmospheric pollution, Dust, Weather conditions.**

A–91 Matsubara, Tamenaka, **Untersuchung der stadluft verunreinigung mittels bestimmung des gehaltes von niederschlagwasser an organischen und anorganischen substanzen.** [Investigation of city air pollution by determinations of organic and inorganic content of rain water]. Mitteilungen aus der Medizinischen Akademie zu Kioto, Kyoto, 23:471–482, **1938.** fig., 15 tables, 5 refs. **DSG**—*Subject Headings:* **Atmospheric pollution, Sampling and analysis.**

A–92 Meldau, Robert, **Variations in the atmospheric dust content due to microatmospheric influences.** Faraday Society, Transactions, 32:1270–1273, Aug. **1936.** 3 figs., refs. **DLC**—Important article from meteorological point of view. Difficulties discussed and conclusions drawn regarding prediction of zones of fog concentration in relation to geographical factors. Relationship between wind currents and dust content discussed and shown graphically. *Subject Headings:* **Atmospheric pollution, Weather conditions, Fog forecasting.**

A–93 Morris, David R., **Air pollution and climate.** Presented at the 34th annual meeting of the American Society for Refrigerator Engineering, New York, Dec. 6, **1938.** **DWB**—Description of air pollution. Behaviour of smoke in relation to meteorological factors. Method of obtaining smoke production data. *Subject Headings:* **Atmospheric pollution, Weather conditions.**

A–94 Morris, David R. **Air pollution and weather.** New York. 3 p., 7 figs., **1939.** **DWB**—Causes and results of air pollution. Concept of shade-miles. Relation of density of particles to wind. Variations of smoke with season and time of day. *Subject Headings:* **Atmospheric pollution, Weather conditions, Visibility.**

A–95 Nolan, J. J., and Guerrini, V. H., **The determination of the mass and size of atmospheric condensation nuclei.** Faraday Society, Transactions, 32:1175–1181. Aug. **1936.** 2 figs., refs., equations. **DLC**—Experimental methods described, calculations of velocity of fall, of coefficient

of diffusion, of mass and size. Effect of time. Observations on nuclei in country air. *Subject Headings:* **Atmospheric pollution, Condensation nuclei.** (See also: Faraday Society, 1936).

A–96 Owens, J. S., **Twenty-five years' progress in smoke abatement.** Faraday Society, Transactions, 32:1234–1243, Aug. 1936. table. **DLC**—Records from numerous cities in Great Britain. *Subject Headings:* **Atmospheric pollution, Smoke abatement, Great Britain.**

A–97 Palmer, C. E., **Atmospheric pollution at Wellington.** The New Zealand Journal of Science and Technology, 19(6):377–381, Nov. 1937. **DLC**—Accounts of observations made with a dust-counter at irregular intervals for 4 years. Particles classified as smoke spheres, aggregates, hygroscopic crystals, glassy particles. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, New Zealand.**

A–98 Patterson, H. S., and Cawood, W., **The determination of size distribution in smokes.** Faraday Society, Transactions, 32:1084–1088, Aug. 1936. 2 figs., refs. Methods attempted for determining size frequency and distribution of smoke particles; they fall into 3 categories: those in which a simultaneous measurement is made of a number of particles suspended in air; those in which some property of the particles is utilized to obtain separation of the various sizes, which can then be enumerated; those in which the smoke is allowed to sediment and an estimate made of size frequency. Photometric method and graticule method particularly investigated. *Subject Headings:* **Atmospheric pollution, Sampling and analysis.** (See also: Faraday Society, 1936).

A–99 Pincus, S. P., and Stern, A. C., **A study of air pollution in New York.** American Journal of Public Health, 27(4):321–333, April 1937. 5 figs., 4 tables. Thorough treatment: plan of comprehensive study of air pollution in New York City outlined. Intensive geographical coverage of a municipality and a wide scope of correlated studies presented. *Subject Headings:* **Atmospheric pollution, New York.**

A–100 Prosad, K., and Sen, D. N., **On the trajectory of ash particles in air and the determination of their size.** Philosophical Magazine, London (7th series), 25:993–1003 1938. 5 refs. A study in determining size of ash particles projected scientifically into the air, believed to aid study of general problems of smokes under differing conditions. Consideration given to initial particles of different sizes and growth of the particles under flight in the same effluent jet. *Subject Headings:* **Atmospheric pollution, Sampling and analysis.**

A–101 Reisner, Ing., **Die Verunreinigung der Stadtlufte.** [The pollution of city air]. Technisches Gemeindeblatt, 42:125–9, 1939. 2 refs. **DLC**—Pollution and soot-fall in cities in relation to season, weather, day of week, etc. *Subject Headings:* **Atmospheric pollution, Weather conditions.**

A–102 Whipple, F. J. W., **The influence of urban conditions on the circulation of electricity through the atmosphere.** Faraday Society, Transactions, 32:1203–1209, Aug. 1936. 2 figs., table, refs. Discussion draws attention of physicists to the difficulty of interpreting such simple observations as those of potential gradient. *Subject Headings:* **Atmospheric pollution, Electrical conductivity of air.**

A–103 Whytlaw-Gray, R., Cawood, W., and Patterson, H. S., **A sedimentation method of finding the number of particles in smokes.** Faraday Society, Transactions, 32:1055–1059, Aug. 1936. 3 figs., 2 tables. Method: known volume of smoke enclosed between two strips of optically worked glass which form the top and bottom of a shallow box. Particles settle mainly on the lower plate and can be counted when the deposit is suitably illuminated. *Subject Headings:* **Atmospheric pollution, Sampling and analysis.**

1940–1944

A–104 Alexander, I. H., **Smoke and health.** Cincinnati Journal of Medicine, 22:492–501, Jan. 1942. 4 figs., 3 charts. Relationship of smoke in the air to respiratory diseases discussed. Smoke creates a deficiency in ultraviolet light. Graphs show average numbers of cloudy weather days in Pittsburgh. *Subject Headings:* **Atmospheric pollution, Public health, Pittsburgh.**

A–105 Ashworth, J. R., **Smoke and rain.** Nature, London, 154:213, Aug. 12, 1944. The 45 years' record of rain in industrial England shows decidedly less rain on Sundays, perhaps due to less smoke in the atmosphere. *Subject Headings:* **Atmospheric pollution, Weather conditions, Rain.**

A–106 Avy, Alban, and Raillères, Raymond, **Sur le dosage des particules solides dans les poussières et les fumées.** [Determination of solid particles in dusts and smokes]. Académie

des Sciences, Paris, Comptes Rendus, 217:605-7, Dec. 13, **1943.** table. *Subject Heading* **Atmospheric pollution, Sampling and analysis.**

A-107 Babaianc, R., **Metodika i rezyl'taty izucheniia aerozagriaznenii Leningrada.** [Metho and results of the study of atmospheric pollution in Leningrad]. Gigiena i sanitaria, U.S.S.R., (9):14–18, **1944.** table. **DLC**—*Subject Headings:* **Atmospheric pollution, Leningrad, U.S.S.R.**

A-108 Berl, E., **Smoke seen through the eyes of a chemist;** extracts from a paper to the Smok Prevention Association, Pittsburgh, 1943. Smokeless Air, 55:18–19, summer **1944.** Compositio and different forms and sources of smoke. *Subject Headings:* **Atmospheric pollution, Smoke.**

A-109 Briggs, Lloyd Vernon, **Smoke abatement, what has been done and is being done to abat smoke;** also material to be used for formulating laws which will be effective and prevent th destruction of health and property and loss of power and light from improper combustion of co and oil. Boston, The Old Corner Book Store, Inc., **1941.** 175 p., figs. A thorough monograp including history of smoke abatement, smoke control in Boston and other cities, description o smoke and other forms of air pollution, effect on health, plant life, property. Action being take abroad. *Subject Headings:* **Atmospheric pollution, Smoke abatement.**

A-110 Brown, Carlton E., and Schrenk, H. H., **Standard methods for measuring extent o atmospheric pollution.** U. S. Bureau of Mines Information Circular No. 7210, Washington, D. C **1942.** 19 p., 3 figs., refs. Nature and aspects of contaminated atmospheres and contaminant discussed briefly. Methods for measuring concentration, size of particles, etc. Weather relation *Subject Headings:* **Atmospheric pollution, Sampling and analysis.**

A-111 Carney, Charles B., **Aids in forecasting minimum visibilities in smoke at La Guardi Field.** New York, April 8, **1944.** (mimeograph) tables, diagrs. **DWB**—Need for considerati of smoke problem in weather forecasting. Smoke pollution relative to wind direction and velocity stability, time of day and year, and relative humidity. *Subject Headings:* **Atmospheric pollution Visibility, Weather conditions, New York.**

A-112 Colman, Lerner, M., **La radicación de industrias en la ciudad.** [The emissions of in dustries in the city]. Revista Medicina y Ciencias Afines, Buenos Aires, 4:336–8, **1942.** ref English summary. **DSG**—Health aspects. Desirability of having an industrial section awa from prevailing winds to avert contamination of residential and business areas. *Subject Heading* **Atmospheric pollution, City-planning, Weather conditions, Public health, Argentina.**

A-113 Coste, J. H., **Atmospheric pollution in the 19th century and in recent years; an attem at comparison.** Analyst, London, 67(800): 361–363, **1942.** table. Data collected in the 19t century, particularly analyses of rainfall, compared to similar recent measurements; results i table entitled: impurities in rain falling in and near Manchester. *Subject Headings:* **Atmospher pollution, Sampling and analysis, Manchester, England.**

A-114 Davidson, W. F., and Master, Warren, **Automatic dust sampling and analyzing instrumen for atmospheric pollution surveys.** Monthly Weather Review 69(9):257–260, Sept. **1941.** figs. Improvements made in the Owens automatic air filter, by the Consolidated Edison Co facilitate sampling outdoors under rigorous conditions. *Subject Headings:* **Atmospheric pollution Sampling and analysis, Instruments.**

A-115 Davidson, W. F., **A study of atmospheric pollution.** Monthly Weather Review, 70:225 234, Oct. **1942.** diagrams, tables. Extensive description of an atmospheric pollution surve and suggestions for others. Measurement of suspended dust. Data on wind velocity and dire tion. Variations and difficulties. Results and conclusions. *Subject Headings:* **Atmospher pollution, Weather conditions, Sampling and analysis.**

A-116 Dobson, G. M. B., and Meetham, A. R., **Atmospheric pollution.** Nature, Londo 151:325–327, March 20, **1943.** Good general article on description and classification of atmo pheric pollution; instruments and methods for measuring; variations due to meteorological factor effect of pollution on city fogs; smoke abatement action. *Subject Heading:* **Atmospheric pollution**

A-117 Fletcher, Robert D., and Smith, E. Dillon, **Meteorological factors affecting smoke pollu tion.** Smoke Prevention Association of America, Proceedings, Detroit, June **1944.** 6 p., 5 fig **DWB**—Effects of advection, convection, inversions, etc., on visibility, as affected by smok Possibilities of forecasting conditions favorable for pollution. *Subject Headings:* **Atmospher pollution, Visibility, Weather conditions, Weather forecasting.**

A–118 Goldberg, M. S., **Pollution of atmospheric air in the neighborhood of sulphate-cellulose paper factories.** Gigiena i Sanitaria, U. S. S. R., 5(6):59, 1940. (Title unchecked). *Subject Headings:* **Atmospheric pollution, U.S.S.R.**

A–119 Great Britain, Department of Scientific and Industrial Research, **Investigation of atmospheric pollution,** 1941–42. Analyst, London, 68(802):17, **1943.** Increase of pollution since the war began, due to increased industrial activity, etc. Effect of rain and clouds in removing sulphur dioxide from air is shown to be a slow process, a matter of days and weeks, rather than hours. *Subject Headings:* **Atmospheric pollution, Great Britain.**

A–120 Harper, Horace J., **Sulfur content of Oklahoma rainfall.** Oklahoma Academy of Science, Procedures, 23:73–82, **1943.** 4 tables, refs. Results of 15 years study of sulfur in rainfall tabulated and discussed. One table gives sulfur content of rain for different parts of Russia; another for states of the U. S. *Subject Headings:* **Atmospheric pollution, Sulphur compounds, Rainfall.**

A–121 Heuberger, J. W., and Turner, N., **Laboratory apparatus for studying settling rate and fractionation of dusts.** Phytopathologische Zeitschrift, 32:166–171, **1942.** 2 figs., 2 tables, 6 refs. **DA**—Detailed description of the apparatus. *Subject Headings:* **Atmospheric pollution, Instruments, Sampling and analysis.**

A–122 Hewson, E. Wendell, **Atmospheric pollution by heavy industry.** Industrial & Engineering Chemistry, 36:195–201, March **1944.** 8 figs., tables, 3 refs. Method of reducing atmospheric pollution by varying the emission of offending gases according to meteorological conditions, as applied at Trail, B. C. *Subject Headings:* **Atmospheric pollution, Weather conditions, Forecasting.**

A–123 Hewson, E. Wendell, **Meteorological investigations in the Columbia River Valley near Trail, B. C.** U. S. Bureau of Mines, Bulletin No. 453, **1944.** 206 p., 130 figs. The relation between meteorological conditions in the valley and atmospheric diffusion is investigated. General distribution of SO_2 in the valley is described, and from mean wind conditions the transport of the gases is derived. Use of geostrophic winds for 6 hr. wind forecasts. Diffusion of the gas, as distinct from wind transport, is governed by turbulence, and its relation to lapse rate and wind velocity is indicated. Instruments fully described. *Subject Headings:* **Atmospheric pollution, Weather conditions, Trail, B. C.**

A–124 Izzo, R. A., et al., **El numero de particles en la atmósfera de la ciudad de Buenos Aires.** [The number of particles in the atmosphere of the city of Buenos Aires]. Semana médica, Buenos Aires, 46, part 2:1117–23, 1939. 6 figs., table, refs. **DSG**—Same authors and title, for 1940. Publicaciones: centro de investigaciones tisiológicas, Buenos Aires, 4:41–57, **1940.** Same for 1941. Publicaciones: centro de investigaciones tisiológicas, Buenos Aires, 5:303–318, 1941. **DSG**—*Subject Headings:* **Atmospheric pollution, Buenos Aires, Argentina.**

A–125 Jones, H. Trefor, **Agriculture and smoke pollution.** Smokeless Air, 11(42):41–44, Summer **1940.** 3 tables, 7 refs. **DWB**—A collection of observations made in Yorkshire over 15 years on the effect of smoke fumes on growth of crops and on the reaction of soils. *Subject Headings:* **Atmospheric pollution, Vegetation, Yorkshire, England.**

A–126 Kostiamin, N. N., and Zhelezniakov, N. S., [**Indicators of the degree of the purity of air in Odessa according to the method of snow tests**]. Gigiena i Sanitaria, U.S.S.R., 5(4):8–10, **1940.** (unchecked). *Subject Headings:* **Atmospheric pollution, Public health, U.S.S.R.**

A–127 Leonard, A. G. G., McVerry, B. P., and Crowley, B., **Atmospheric pollution in Dublin during the years 1939, 1940, and 1941.** Scientific Proceedings of the Royal Dublin Society, 22(25):257–265; Sept. 1940, 22(41):399–404, Sept. 1941; and 23(3):10–17, Nov. 1942. 12 figs., 5 tables. **DWB**—Measurement of suspended matter and sulphur dioxide, and measurement of daylight in Dublin and in country near Dublin. Relation of deaths from respiratory disease to atmospheric pollution in city and country. *Subject Headings:* **Atmospheric pollution, Public Health, Dublin, Ireland.**

A–128 McElroy, G. E., et al., **Dilution of stack effluents.** U. S. Bureau of Mines, Technical Paper No. 657, Washington, D. C., **1944.** 46 p., 33 figs., 6 tables, 15 refs. **DLC**—Theories, experiments and results on the discharge of a turbulent jet into various wind conditions. Information sought on pollution close to the stack. *Subject Headings:* **Atmospheric pollution, Disperse systems.**

A–129 Mills, C. A., **A practical approach to the problem of urban air pollution.** Cincinna Journal of Medicine, 22:502–7, 1941–42. **DSG**—Chart shows water vapor in the air at differe seasons. Health aspects and effects of pollution described. Factors causing smog discusse *Subject Headings:* **Atmospheric pollution, Public health, Smog, Cincinnati, Ohio.**

A–130 Pye, Norman, **Formation of land fogs and the atmospheric pollution of towns.** Geograph 29(3):71–80, 1944. 3 figs. **DLC**—Thorough description of fogs. Higher frequency in towr Radiation fogs, advection fogs, temperature inversions. Particles in air as condensation nucl Effect of smoke fogs on sunlight, visibility, etc. *Subject Headings:* **Atmospheric pollution, Weath conditions, Fog, Light, Condensation nuclei.**

A–131 ——— **Rapid surveys of atmospheric pollution,** Royal Meteorological Society, Quarter Journal, 70:281–85, **1944.** figs.—Need for rapid measurement stressed and method given f obtaining such information. Problems discussed. Procedures for deposited solid matter, f suspended solid matter (smoke), and for sulphur dioxide measurement described. *Subject Hea ings:* **Atmospheric pollution, Sampling and analysis.**

A–132 Rikhter, E. V., **Ezhektora dlia zabora prob vozdukho pri opredelenii kontsentratsii p i gazov.** [Ejectors for sampling air for determination of dust and gases]. Gigiena i Sanitar U.S.S.R., 9(10/11):30–34, 1944. 3 figs., 2 tables, refs. **DLC**—Abstract in Chemical Abstrac 42:4003, June 20, 1948. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, I struments.**

A–133 Sherlock, R. H., and Stalker, E. A., **The control of gases in the wake of smoke stacl** Mechanical Engineering, 62:455–458, June **1940.** 7 figs. *Subject Headings:* **Atmospheric poll tion, Disperse systems.**

A–134 Sherlock, R. H., and Stalker, E. A., **A study of flow phenomena in the wake of smo stacks.** Department of Engineering Research, University of Michigan, Ann Arbor, Bulletin N 29, March **1941.** 49 p., 34 figs., tables, 3 equations. **DLC**—Theoretical and experimental studi made at the Crawford Station, Chicago, to determine the cause of downwash of stack gases a methods of prevention. Wind velocity is the only weather condition influencing the downwa of stack gases. Wind effects described. *Subject Headings:* **Atmospheric pollution, Disper systems, Weather conditions.**

A–135 Stern, Arthur C., **Atmospheric pollution through odor.** Heating and Ventilating, 41(1 53–57, Nov. **1944,** 4 figs., 2 tables. Odorous substances and sources, odor intensity scale, diluti osmoscopes, odor fatigue, etc., discussed. Odor control in atmosphere and in buildings considere *Subject Headings:* **Atmospheric pollution, Odor.**

A–136 Slonevoky, S. I., and Danzig, N. M., [**Hygiene of air and climate**]. In: Uchebr Gigieny, [Manual of hygiene], (Sysin, A. N., editor), 4th edition, Moscow, **1942,** p. 15–42. figs., tables, refs. **DSG**—*Subject Headings:* **Atmospheric pollution, Public health.**

A–137 Taylor, E. G. R., **Problems of fog and air pollution.** Smokeless Air, 12(48):96–10 Winter/Spring **1942.** Map. Reconstruction of Britain with an eye to air pollution suggeste Map shows quantity of solid matter which falls from the atmosphere monthly. *Subject Headin* **Atmospheric pollution, City planning, Fog.**

A–138 Thellier, Odette, **Sur l'ionisation et la pollution actuelles de l'atmosphère parisien** [The ionization and actual pollution of the Paris atmosphere]. Académie des Sciences, Par Comptes Rendus, 216:589–91. April 28, **1943.** table.—Pollution at different hours and different years, March, 1943, and March, 1935, compared. Short discussion of condensati nuclei. *Subject Headings:* **Atmospheric pollution, Paris.**

A–139 Thomas, Moyer D., et al., **Automatic apparatus for determination of small quantities SO_2 in air;** application to hydrogen sulphide, mercaptan, and other sulphur and chlorine co pounds. Industrial and Engineering Chemistry, Analytical Edition, 15:287–290, April 15, 19 3 figs., table, 8 refs.—Highly technical article describing apparatus and particular modificati for added precision and sensitivity. *Subject Headings:* **Atmospheric pollution, Sampling a analysis.**

A–140 Von Hohenleiten, H. L., and Wolf, E. F., **Wind-tunnel tests to establish stack height Riverside Generating Station.** American Society Mechanical Engineers, Transactions, p. 671–8 Oct. **1942.** 23 figs., 8 refs.—Detailed description of model test procedure to investigate flue-g

problem and height of stacks for a Baltimore generating station. Three phases to problem: to establish wind and weather conditions which would produce the most serious smoke annoyance; to determine the effect of adding units to the plant; to investigate all possible means for improving dissipation of flue gas. *Subject Headings:* **Atmospheric pollution, Disperse systems, Smoke abatement.**

A–141 Beck, Niels C., **Fog and smoke restrictions in the St. Louis area.** American Meteorological Society, Bulletin, 26:315–16, Oct. **1945.**—Study of visibility conditions made at Parks Airfield 1936–38. Smoke and fog condition maximum in January. Air mass analysis of fog situations. Effect of sun. Forecasting of fog conditions, etc. *Subject Headings:* **Atmospheric pollution, Weather conditions, Fog, Forecasting, St. Louis, Missouri.**

†**A–142** Great Britain, Department of Scientific and Industrial Research, **Atmospheric pollution in Leicester: a scientific survey,** Atmospheric Pollution Research, Technical Paper No. 1, London, **1945.** 161 p., 4 plates, 30 figs., 38 tables, 34 refs. **DWB**—Results of several years quantitative observations of smoke conditions at a number of stations in and about a heavily populated industrial area. History of organization; description of apparatus for measuring sootfall, suspended particles, SO_2, and ultraviolet in daylight. Variation in pollution about heavily polluted center of town: concentration remains heaviest there even on windy days, but the distribution is slightly skewed toward the downwind side and the distribution of ultraviolet reduction even more skewed as it is affected by particles dissipated upward and subject to more wind-drift. Effect of smoke carried great distances from industrial areas on both town and country air. Effect of central smokeless zone. Variations with time of day, week, year, etc. Methods of control. Deposits on vegetation. Monthly weather and contamination data for 1937, 1938, 1939, including lapse-rates of 1,000 feet, earth and grass temperatures, thunderstorms, sunshine, cloudiness, fog, wind, etc. Reviewed by Meetham, A. R., in Weather, London, 1:28–29, 1946. *Subject Headings:* **Atmospheric pollution, Weather conditions, Light, Disperse systems, Leicester.**

A–143 Great Britain, National Smoke Abatement Society, **The report of the joint conference on the Institute of Fuel and the National Smoke Abatement Society. Report—1945.** London, **1945. DWB**—Contains articles dealing with smoke abatement and correlated problems, including a noteworthy study, **"Atmospheric pollution,"** by G. M. B. Dobson. *Subject Headings:* **Atmospheric pollution, Smoke abatement.**

A–144 Great Britain, National Smoke Abatement Society, **Smokeless Zones.** London, Chandos House, **1945.** 12 p., illus. **DLC**—Post-war planning for smoke abatement. *Subject Headings:* **Atmospheric pollution, City-planning, Smoke abatement.**

A–145 Hewson, E. Wendell, **The meteorological control of atmospheric pollution by heavy industry.** Royal Meteorological Society, Quarterly Journal, 71(309–310):266–282, July–Oct. **1945.** 10 figs., table, 5 illus. Discussion of history of Trail, B. C., fumes difficulty, local topography, smelter installations, observed patterns of fumigation, theoretical considerations, distribution of SO_2 in valley, mechanism of diurnal fumigations, control measures and their application to other industrial units. *Subject Headings:* **Atmospheric pollution, Weather conditions, Forecasting, Trail, B. C.**

A–146 Hill, G. R., Thomas, M. D., and Abersold, J. N., **Effectiveness of high stacks in overcoming objectionable concentrations of gases at ground level.** Industrial Hygiene Foundation of America, 9th meeting, part 4, p. 11–43, **1945.** (Title unchecked). *Subject Headings:* **Atmospheric pollution, Disperse systems.**

A–147 Stead, Frank M., **Study and control of industrial atmospheric pollution nuisances.** American Journal of Public Health, 35:491–498, May **1945.** 13 refs. Description of nuisances of this type caused by inert smokes and dusts, mucous membrane irritants, and malodorous substances. *Subject Headings:* **Atmospheric pollution, Public health.**

A–148 Stern, Arthur C., **Atmospheric pollution due to gas.** Heating and Ventilating, 42(1):64–66, and 42(2):73–74, **1945.** 2 figs., 2 tables, 3 equations. Gas pollution described, problems in atmosphere; concentrations; general problems of industrial area. Discussion of flue gas and abatement action. *Subject Headings:* **Atmospheric pollution, Gases.**

A–149 Stern, Arthur C., **The use of fuel consumption and equipment data in the abatement of atmospheric pollution.** Heating, Piping and Air Conditioning, 17(8):447–454, Aug. **1945.** 5 figs., 11 tables.—Presentation of data resulting from a survey of the quantity of fuel types burned in New York City in 1935, geographic distribution within the city, and number, size and use of each

unit of fuel burning equipment found by survey in 1936–37. The use of this fuel consumptio data to predict the intensity of atmospheric pollution. *Subject Headings:* **Atmospheric pollution Forecasting, New York City.**

1946

A–150 Bonacina, L. C. W., **The smokiest city in Britain.** Weather, London, 1(2):53, June, 1946 —Short note denying that London is Britain's smokiest city, and giving evidence. Also Coste J. H., **London smoke,** same publication. Saying that London is the smokiest city in Britai from November through March. *Subject Headings:* **Atmospheric pollution, London.**

A–151 Bonacina, L. C. W., **London visibility** (letter to the Editor), Weather, 1:83, July **1946.**— Report of personal observations of visibility across London. Seasonal contrasts considered *Subject Headings:* **Atmospheric pollution, Visibility, London.**

A–152 Chicago Association of Commerce, Committee on Smoke Abatement, **Seasonal variation in dustfall.** Heat, the Stoker Magazine, 50(1):28–29, July **1946.** fig., illus.—Discussion of fa of dust and soot in Chicago as influenced by wind, weather and season. It was found that th peak of dust-fall coincided with peak wind speed (March) although peak combustion occurs i January. Poor visibility is more nearly related to the combustion cycle. No evident correlatio with precipitation. *Subject Headings:* **Atmospheric pollution, Weather conditions, Chicago.**

A–153 Damon, W. A., **Prevention of atmospheric pollution by noxious or offensive gases, fume or dusts.** British Intelligence Objectives Subcommittee, Item 22, 24 Fin. Report 690, H. M. S. O. **1946.** 55 p. **DLC**—Object of investigation was to inquire as to measures adopted in German (particularly in German chemical industries) to prevent atmospheric pollution by noxious o offensive gases, etc. Conclusions are based on data from a fairly representative selection o factories. *Subject Headings:* **Atmospheric pollution, Smoke abatement, Germany.**

A–154 Davidson, W. F., **The measurement of atmospheric pollution.** American Meteorologica Society, Bulletin, 27(9):547–549, Nov. **1946.**—Need for consulting meteorologists in smok prevention research stressed. Types of smoke described. Measurement of concentration an rate of fall of particles described with consideration given to local obstructions to air currents *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Weather conditions.**

A–155 Druett, H. A., **Determination of variation of composition of airborne crystalline material with particle size.** Nature, 158:946, Dec. 28, **1946.**—"Cascade impactor" utilized as a metho suitable for study of silicate-silica aerosols. Advantages over previous methods for determinin variation in composition with particle-size. *Subject Headings:* **Atmospheric pollution, Samplin and analysis.**

A–156 Feiner, Benjamin, and Siegel, Jac, **Suspended particulate matter in New York City air** Air Treatment Engineer, 9(3):88–89, March **1946.**—Particle counts made in New York City air average numbers, size, and insoluble solid content determined. *Subject Headings:* **Atmospheri pollution, New York City.**

†**A–157** Feiner, Benjamin, Burke, W. J., and Moscowitz, S., **Estimation of sulphur compounds in air.** Journal of Industrial Hygiene and Toxicology, 28:276–277, Nov. **1946.** refs.—Method fo measuring sulphur compounds in industrial air. *Subject Headings:* **Atmospheric pollution Sampling and analysis.**

A–158 Great Britain, Fuel Research Station, **Smoke and its measurement.** Correlation o optical density with nature and quantity of smoke from a hand-fired Lancashire boiler. Fue Research Technical Paper No. 53, London, H. M. S. O., **1946.** 20 p., 14 figs., 9 tables. **DWB**— Investigation to determine the quantity of suspended matter in smokes made under known condi tions, the physical and chemical properties of the suspended matter, the composition of the flu gas, and the variation of these properties with the optical density of the smoke. Apparatus designed to measure optical densities of smokes in the chimney. *Subject Headings:* **Atmospheri pollution, Sampling and analysis, Visibility.**

A–159 Meetham, A. R., **Turbulence and atmospheric pollution.** Weather, London, 1:200–205 **1946.** 5 figs., 2 pl. Behaviour of smoke worked out from 3 different types of source. A series o elaborate graphs explains smoke concentration and distribution under varying conditions of sourc and various meteorological factors. *Subject Headings:* **Atmospheric pollution, Disperse systems Weather conditions, Turbulence.**

A–160 Mills, Clarence A., **Pollution factors in urban atmospheres.** Cincinnati Journal of Medicine, 27:441–6, 1946. **DSG**—Table shows ability of air to hold water vapor in different seasons at different times of day. Constituents of smoke discussed. Importance of natural atmospheric or weather factors on a city's smoke problem emphasized. *Subject Headings:* **Atmospheric pollution, Weather conditions.**

A–161 Mills, Clarence A., **Relationship of smoke to pneumonia and other infections of the respiratory system.** Cincinnati Journal of Medicine, 27:624–33, Sept. 1946. 4 figs., 2 tables, 5 refs. **DSG**—Cities have different degrees of pollution as a result of their topographic and meteorological features. Pneumonia increases with heavier sootfall. Striking relation between air pollution and respiratory diseases pointed out. *Subject Headings:* **Atmospheric pollution, Public health.**

A–162 Mills, Clarence A., **The steam locomotive and atmospheric pollution.** Cincinnati Journal of Medicine, 27:634–9, 1946. **DSG**—Table shows seasonal differences in soot-fall and fly-ash deposit over Cincinnati, 1940–1945. Conclusions drawn regarding control of stack effluents during different weather conditions, especially with regard to public health. *Subject Headings:* **Atmospheric pollution, Weather conditions, Public health, Cincinnati.**

A–163 Poulter, R. M., **Tobacco smoke and cloud particles.** Weather, 1:77, 1946.—Short article explains relation between atmospheric pollution and its color reflection effects in a room and application on a large scale of the same principle to cloud observation. *Subject Headings:* **Atmospheric pollution, Light.**

A–164 Regan, C. J., **The air of London,** Journal of the Royal Institute of Public Health, Reprint, 9(12):382–395. 4 figs., 4 tables, 25 refs. **DSG**—Summary of air pollution work in London. Source, quantity, and variations in degree of atmospheric pollution throughout day and year and over period of years. Measurement devices and methods. Glasgow compared. *Subject Headings:* **Atmospheric pollution, Smoke abatement, London.**

A–165 Roche, L., **Mésure de la concentation des poussières dans l'atmosphère.** [Measurement of dust concentration in the atmosphere]. Revue Industries Minerales, 509:205–210, April, 1946. **DGS**—(Chemical Abstracts, 41:2943, 1947). Discussion of various procedures for capturing dust particles according to properties of particles. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Instruments.**

A–166 Siegel, Jac, and Fiener, Benjamin, **Sootfall-studies for New York City,** Air Treatment Engineer, 9(2):42–47, Feb. 1946. 5 figs., 5 tables. **DM**—Results of studies of sootfall made during 1936. Conclusion that relative humidity, wind direction and velocity have very little effect on the final pollution in the city as a whole; that total settled matter varied inversely with temperature and directly with total precipitation. *Subject Headings:* **Atmospheric pollution, Weather conditions, New York City.**

A–167 Smoke Prevention Association of America, Inc., **Proceedings of the 39th annual meeting, conference on smoke prevention and conservation of fuels, 1946. DLC**—List of authors and articles: Olson, Herman, **Importance of smoke abatement in city planning,** p. 2; Ely, Sumner B., **Dust and its relation to smoke,** p. 7; Chicago Association of Commerce, **A comparison of seasonal variations in dustfall and other factors related to air pollution,** p. 11; Carter, J. H., **A proposed standard for regulating permissible discharge of solids from stacks,** p. 13; Connell, Lloyd L., **Stoker industry and smoke abatement,** p. 16; Battaille, G. S., **Correcting smoke with automatic controls,** p. 24; Lammers, H. B., **Effect of smoke abatement surveys conducted in various cities,** p. 49. And other articles pertaining to smoke abatement and fuel technology. *Subject Headings:* **Atmospheric pollution, Smoke abatement.**

A–168 Sonkin, L. S., **Modified cascade impactor, device for sampling and sizing aerosols below one micron in diameter.** Journal of Industrial Hygiene and Toxicology, 28:269–272, Nov. 1946. 3 figs., 2 tables, 4 refs.—A modification of the cascade impactor is described. It is an efficient sampler for characterization of aerosols of MMD as low as 0.25ru. It separates clouds containing particles of glycerol-water methylene blue solution below 1ru into different size characterizations of the aerosol. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Instruments.**

A–169 Sutton, O. G., **Wind and turbulence** (letter to the Editor), Weather, 1:82, July 1946.—Important comment on Review of **"Atmospheric pollution in Leicester."** The close association between wind and turbulence shown in explaining the drift of smoke from its source. Smoke

forecasting discussed. *Subject Headings:* **Atmospheric pollution, Disperse systems, Weather conditions, Forecasting, Turbulence.**

A–170 Wait, G. R., **Some experiments relating to the electrical conductivity of the lower atmosphere.** Journal Washington Academy of Sciences, 36(10):321–343, Oct. 15, **1946.** refs.—An article dealing mainly with conductivity of the air in general. History and results of research. Electrical conductivity of atmosphere varies according to seasonal and other conditions; reduced in cities and towns because of the destruction by particles in smoke and combustion gases of the small ions on which conductivity depends. *Subject Headings:* **Atmospheric pollution, Electrical conductivity of air.**

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A–171 Allcut, E. A., **The smoke problem.** Engineering Journal of Canada, 30(4):154–160, April **1947.** 14 figs., 25 refs. **DPL**—Also in Steam Engineer, 16:391, July **1947.** Where smoke comes from and where it goes, causes, consequences, measurement, and remedies are discussed. *Subject Headings:* **Atmospheric pollution, Smoke.**

A–172 Andrews, William H., **Atmospheric pollution from house refuse incineration.** Smokeless Air, 63:38–42, Spring **1947,** 3 figs. **DWB**—Discussion of sources and composition of such pollution, abatement methods, incinerator dust problems and methods to eliminate them. *Subject Headings:* **Atmospheric pollution, Smoke abatement.**

A–173 Beer, Charles G. P., and Leopold, Luna B., **Meteorological factors influencing air pollution in the Los Angeles area.** American Geophysical Union, Transactions, 28(2):173–192, **1947.** 13 figs., table, 8 refs. **DWB**—Temperature inversions and local winds are the most important factors in determining concentration of pollutants in this area. Surface and upper air data on details of wind structure, temperature and visibility are given. *Subject Headings:* **Atmospheric pollution, Weather conditions, Los Angeles.**

A–174 Brooks, C. E. P., **Atmospheric pollution in Great Britain in relation to the burning of coal.** National Smoke Abatement Society, Proceedings of the Edinburgh Conference, p. 98–106, **1947.** 7 figs., table. **DWB**—Incidence of sootfall, poor visibility, etc., in the United Kingdom as determined from deposit gauges throughout the country. Charts show that industrial centers have poor visibility on 200 or more days a year, compared to 50 days per year in best localities, and that places of low visibility correspond to places of greatest sootfall. *Subject Headings:* **Atmospheric pollution, Visibility, Great Britain.**

A–175 Dahlkamp, V., and Kantus, H., **Untersuchungen über den Reinheitsgrad der Atmosphäre mit Hilfe der neutralen Punkte der atmosphärischen Polarisation.** [Research on the degree of purity of the atmosphere with the help of the neutral points in atmospheric polarization]. Zeitschrift für Meteorologie, 1(8/9):253–263, May/June **1947,** and 1(10):303–310, July **1947.** 21 tables, 30 refs. **DLC, DWB**—A thorough summarization and discussion of the effect of atmospheric turbidity on the position of the Arago and the Babinet Neutral Points with various solar altitudes. Effect of temperature, humidity, dust of different composition, etc. on visibility. Research at Potsdam and Babelsberg compared with earlier work done at Arnsberg and Hamburg. *Subject Headings:* **Atmospheric pollution, Electrical conductivity of the air, Visibility, Germany.**

A–176 Drinker, Philip, **Atmospheric trade wastes.** Journal of Chemical Education, 24:498–501, Oct. **1947. DBS**—Various industrial sources of atmospheric pollution, coal smoke, metallurgical and chemical industries, dusty industries, fogs, and condensation discussed. Suggestions for elimination of the nuisance. *Subject Headings:* **Atmospheric pollution, Smoke abatement.**

A–177 ——— **Dust studies simplified by new laboratory duster.** Chemical Industries, 60:228–229. Feb. **1947.** illus.—New laboratory duster designed to give reproducible results by eliminating capricious factors. Deposition, adhesion, rate of settle and toxicity are some of the characteristics of dusts which may be studied. Insecticides one of the fields which will benefit. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Instruments.**

A–178 Foley, R. B., **Terminal velocity as the measure of dust-particle characteristics.** American Society Mechanical Engineers, Transactions, 69:101–108, Feb. **1947.** 5 figs., 3 tables, 30 refs., 4 equations. Discussion:—The importance of considering the effect of all characteristics of a particle of industrial dust: size, shape, and density, upon its behaviour in a fluid. The terminal velocity of a dust particle is a measurement of the combined effect of all three particle characteristics as they affect behaviour. *Subject Headings:* **Atmospheric pollution, Disperse systems.**

A–179 Fried, M. L., and Jackson, M. L., **Sulphur collection in precipitation by means of an all-weather non-corrosive rain and snow gauge.** Science, 106:19–20, July 4, 1947. 2 figs., 4 refs.—Purpose, description of method, and choice of site discussed. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Sulphur.**

A–180 Great Britain, National Smoke Abatement Society, **Annual report of the —.** Manchester, 1930–1947. 17 reports. **DLC**—*Subject Headings:* **Atmospheric pollution, Great Britain.**

A–181 Great Britain, National Smoke Abatement Society, **Proceedings of the Edinburgh conference, 1947.** London, Chandos House, **1947.** 107 p. **DWB**—Contains extensive reports on: area organization for smoke prevention; work of government departments in relation to smoke prevention; abolition of domestic smoke, grit, and sulphur problems; smoke and health. *Subject Headings:* **Atmospheric pollution, Smoke abatement.**

A–182 Gucker, Frank T. Jr., Pickard, Hugh B., and O'Konski, Chester T., **Photo-electric instrument for comparing the concentrations of very dilute aerosols and measuring low light intensities.** American Chemical Society, Journal, 69:429–38, **1947.** Diagrs.—(Chemical Abstracts, 41:2943, **1947**). Description of design, construction, and operation of this sensitive instrument which was developed primarily for measuring smoke penetrations through efficient gas-mask filters. Can be calibrated to measure smoke concentrations. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Instruments.**

A–183 Harlow, I. F., and Powers, T. J., **Pollution control at large chemical works.** Industrial and Engineering Chemistry, 39(5):572–577, May **1947.** 10 figs. **DPL, DLC**—Describes efforts made by Dow Chemical Co. to eliminate odors, irritants, and aerosols. *Subject Headings:* **Atmospheric pollution, Smoke abatement.**

A–184 Hebley, Henry F., **Factors rarely considered in smoke abatement.** Mechanical Engineering, 69(4):281–287, April **1947.** 4 figs., 3 tables, 7 refs.—Meteorological aspects of pollution problem in Pittsburgh area. Effects of stability, air drainage. Discussion in Mechanical Engineer 69(12):1048-1049, Dec. 1947, by Gosline, Neuberger, Davidson. *Subject Headings:* **Atmospheric pollution, Smoke abatement, Weather conditions.**

A–185 Hemeon, W. C. L., and Hatch, T. F., **Atmospheric pollution, Pittsburgh, Pa.** Industrial and Engineering Chemistry, 39(5):568–571, May **1947.** fig., 2 tables, refs. **DLC**—Appraisal of pollution; sampling methods and analysis; procedures for measurement of industrial atmospheric pollution; classification according to pollutants and their outstanding physical properties; control. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Pittsburgh.**

A–186 Kay, K. K., and Barrett, H. M., **Evaluation of minimal prophylactic dose of antirachitic radiation for rats with observations of antirachitic wavelength absorption by smoky atmospheres.** Journal of Industrial Hygiene and Toxicology, 29:41–6, Jan. **1947.** figs., tables, refs. **DSG**—Experiments in determining absorption of solar ultraviolet energy by atmospheric smoke. Amount of ultraviolet radiation necessary to prevent rickets in rats determined. *Subject Headings:* **Atmospheric pollution, Public health, Light, Animals.**

A–187 Kraus, E. B., **Note on fog and atmospheric pollution.** Royal Meteorological Society, Quarterly Journal, 73(315/316):188–190, Jan./April 1947.—Particles in air affect radiation balance. Relation to fog. Formula for radiational loss of heat from surfaces of particles. Effect on weather conditions. *Subject Headings:* **Atmospheric pollution, Radiation, Weather conditions.**

A–188 Langstroth, G. O., et al., **A laboratory study of visibility through clouds.** Canadian Journal of Research, 25 (Section A):49–57, Jan. **1947.** 6 figs., 2 tables, 10 refs., equations. **DLC**—Detailed technical laboratory experiments using ammonium chloride smoke at various brightness levels. Results indicate the equation given is adequate. *Subject Headings:* **Atmospheric pollution, Visibility.**

A–189 Langstroth, G. O., **The recognition of objects nearly obscured by a cloud.** Canadian Journal of Research, 25 (Section A):58–67, **1947.** fig., 2 tables, 2 equations. **DLC**—A detailed study of the conditions under which the apparent loss of definition occurs was carried on simultaneously with the study of total obscuration. The optical density of smoke required to produce loss of definition was found to be related to cloud brightness. *Subject Headings:* **Atmospheric pollution, Visibility.**

A–190 Lipscomb, W. N., Rubin, T. R., and Sturdivant, J. H., **Investigation of a method for analysis of smokes according to particle size.** Journal of Applied Physics, 18:72–79, Jan. **1947.** 8 figs., refs., equations. **DWB**—Electrical precipitation method. Sizes measured. Agreement between theory and experiment is fair; range of sizes of particles precipitated at a given point is large. *Subject Headings:* **Atmospheric pollution, Sampling and analysis.**

†***A–191** Marsh, Arnold, **Smoke, the problem of coal in the atmosphere.** London, Faber and Faber, Ltd., Aug. **1947.** 306 p., 21 figs., tables, 173 refs. **DWB, DLC**—A book for popular use, which covers systematically most of the aspects of atmospheric pollution and its prevention. Effect of smoke on health, plant life, buildings, etc. Based on research done by Department of Scientific and Industrial Research. Excellent bibliography. *Subject Headings:* **Atmospheric pollution, Smoke.**

A–192 ——— **Maximum allowable concentration of air contaminants.** Heating and Ventilating, 44(12):94a, Dec. **1947.** table; reference data. Table contains data on: gases and vapors; toxic dusts, fumes and mists; mineral dusts; radiations. *Subject Headings:* **Atmospheric pollution, Public health.**

A–193 Meetham, A. R., and Monkhouse, A. C., **Atmospheric pollution and the chemist.** Industrial Chemist, 23:443–8, **1947.** 2 tables, 15 refs.—Account of gaseous and solid materials existing in the atmosphere and methods for their removal. Part played by chemist stressed. *Subject Headings:* **Atmospheric pollution, Sampling and analysis.**

A–194 ——— **New instruments for measuring air contamination demonstrated at New York A.I.H.A. meeting.** Heating and Ventilating, 44(11):116+, Nov. **1947. DWB**—Four instruments demonstrated at October 1947 meeting for measuring air contamination by halogenated hydrocarbons. *Subject Headings:* **Atmospheric pollution, Instruments.**

A–195 ——— **Recommendations for the abatement of smoke and atmospheric pollution.** Coal-Heat, 52(5):28–29, Nov. **1947.** Toronto's atmospheric pollution problem outlined. Industrial sources of nuisance surveyed. 14 recommendations for an anti-smoke program given. *Subject Headings:* **Atmospheric pollution, Smoke abatement, Toronto.**

A–196 Roth, H. P., and Swenson, E. A., **Physiological studies of irritant aspects of atmospheric pollution.** Los Angeles: Office of Air Pollution Control and University of Southern California School of Medicine, Oct. 15, **1947.** 48 p. Mimeographed. (title unchecked). *Subject Headings:* **Atmospheric pollution, Public health.**

A–197 Stocks, Percy, **Does smoke cause cancer?** Studies in medical and population subjects No. 1. Regional and local differences in cancer death rates, 1947. Smokeless Air, 65:11–12, Autumn/Winter, **1947. DWB**—Either smoke is an important factor in producing lung cancer or sunshine is an important factor in preventing its incidence. *Subject Headings:* **Atmospheric pollution, Public health.**

A–198 Sutton, O. G., **The problem of diffusion in the lower atmosphere.** Royal Meteorological Society, Quarterly Journal, 73(317/318):257–281, July/Oct. **1947.** fig., 3 tables, 9 refs. Discussion.—A detailed technical account is given of a theory of atmospheric diffusion developed at Porton 1932–38. The theory leads to formulae of the correct functional form for calculating atmospheric diffusion in the absence of very large temperature gradients and when wind gradient is observed above the layer where surface roughness predominates. Some observations on rate of evaporation given also. *Subject Headings:* **Atmospheric pollution, Disperse systems, Weather conditions, Turbulence.**

A–199 Sutton, O. G., **The theoretical distribution of airborne pollution from factory chimneys.** Royal Meteorological Society, Quarterly Journal, 73(317/318):426–436, July/Oct. **1947.** 7 tables, refs.—Refinement of theories of eddy diffusion (Bosanquet & Pearson, 1936), enables author to calculate numerical values for diffusion coefficients, for concentrations of contaminants at ground a given distance downwind from a source of a given height, etc. Effects of change in stability on diffusion coefficient and on numerical values discussed. Results in agreement with measurements made at Trail, B. C., by Hewson. Mathematical theory given in detail. Summary of the paper by author, Weather, London, 2:249–251, 1947. *Subject Headings:* **Atmospheric pollution, Disperse systems, Turbulent exchange.**

A–200 U. S. Public Health Service, Engineering Section, Industrial Hygiene Division, **Infrequently used dust sampling equipment.** Industrial Hygiene News Letter, 7(6):8, June **1947.**

DSG—Brief descriptions of various instruments: soluble filter, insoluble filter, konimeter, Owens jet, thermal precipitator, and electrostatic precipitator. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Instruments.**

A–201 Veitser, V. J., **O prilozhimosti nefelometricheskogo metoda k opredeleniiu dal'nosti vidimosti i koefitsienta oslableniia sveta v gustykh dymakh i tumanakh.** [On the applicability of nephelometric method of determination of visibility and extinction coefficient in thick smoke and fog]. Zhurnal Teknicheskoi Fiziki [Journal of Technical Physics], U.S.S.R., 17(4):469–474, **1947.** 3 figs., 4 tables, 7 refs. **DLC**—Nephelometric method of determining transparency of atmosphere, found not to be recommended for investigating dense mists, dusty atmospheres and artificial smoke clouds. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Visibility.**

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A–202 Ashworth, J. R., **Atmospheric pollution and the deposit guage.** Weather, 3:137–140, May **1948.** figs., tables.—Followed by "Notes" on atmospheric pollution and the deposit gauge, by Meetham, A. R. Various types gauges described and evaluated. Reasons why deposit gauge is not reliable for measuring air pollution. A revolving apparatus to intercept impurities carried by winds is suggested. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Instruments.**

A–203 Brown, Thomas P., **Forecasting of New York steam system peak loads.** Paper to National District Heating Association, **1948;** tables, chart. (Abstract in Heating and Ventilating, 45(6):114, June, 1948).—Study made of factors affecting the accurate forecast of peak sendout loads during the heating season. Showed that while daily loads follow 6 a.m. temperature roughly, 3 other factors have influence: day of week, apparent lag in heating between abrupt temperature change and the change in demand, and the number of sunshine hours. Wind velocity also has a distinct effect on heat load. *Subject Headings:* **Atmospheric pollution, Weather conditions, Forecasting.**

A–204 Brun, Ed., Demon, L., and Vasseur, M., **Captation mécanique de corpuscules en suspension dans l'air.** [Mechanical capturing of particles in suspension in air]. La Récherche Aeronautique, Paris, 1:15–19, Jan. **1948.** 7 figs., 2 refs.—Description given of an electronic method of collecting air particles. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Instruments.**

A–205 Byram, George Marsden, and Jemison, G. M., **Some principles of visibility and their application to forest fire detection.** U. S. Dept. of Agriculture Technical Bulletin No. 954, Washington, D. C., **1948.** 61 p., illus. **DA**—Effect of haze on visibility. Haze and sunlight. Practical measurements of visibility. Visibility meters listed. Methods for estimating visibility without instruments. Application to fire detection problems. *Subject Headings:* **Atmospheric pollution, Visibility.**

A–206 Carmichael, H., and Tunnicliffe, P. R., **Measurement of alpha-active dust in the atmosphere.** Journal of Industrial Hygiene and Toxicology, 30:211–27, July **1948.** 17 figs., 6 refs. **DSG**—Radioactivity of atmospheric dust and effect when absorbed into body. Decay curves; apparatus; filter, precipitator, airflow measurements, methane proportional counter. Effect of voltage on collection, etc. Determination of various radioactive elements. *Subject Headings:* **Atmospheric pollution, Radioactivity, Public health.**

A–207 Carter, **J. H., Smoke abatement's wider horizons.** Paper to Annual Meeting of Smoke Prevention Association of America, **1948;** abridged in Combustion, 20(1):43–45, **1948. DM**—Complexity of air pollution problems due to many factors other than smoke. Research program urged. Work of several cities reviewed. *Subject Headings:* **Atmospheric pollution, Smoke abatement.**

A–208 Davidson, Bill, **Our poisoned air.** Collier's, 122:68+, Oct. 23, **1948.**—A good popular article describing the smog problems in Meuse, Trail, B. C. and in various American cities, the damage, abatement measures, etc. *Subject Heading:* **Atmospheric pollution.**

A–209 Dobson, G. M. B., **Some meteorological aspects of air pollution.** Royal Meteorological Society, Quarterly Journal, 74(320):133–143, April **1948.** 4 figs., 4 refs.—Summary of important conclusions reached in **Atmospheric pollution in Leicester; a scientific survey.** Author shows that suspended particles and SO_2 are not concentrated downwind at the surface as much as might be expected, indicating that such pollution must be dispersed either laterally or vertically. Measurement of daylight at Leicester indicated that upward dispersal by turbulence was more important

than lateral dispersal, the upper winds carrying the contaminants rapidly downwind. *Subject Headings:* **Atmospheric pollution, Weather conditions.**

A–210 Falconer, Raymond E., and Vonnegut, Bernard, **Smoke from smelting operations as a possible source of silver iodide nuclei.** General Electric Research Laboratory, Occasional Report No. 4, Project Cirrus. Schenectady, New York, July 15, 1948. 4 p., 2 figs., 4 refs. **DWB**—Possibility that silver iodide from smelter stacks might increase rainfall investigated by comparing rainfall data for various states with high smelter production. No significant correlation could be found. *Subject Headings:* **Atmospheric pollution, Weather conditions, Condensation nuclei.**

A–211 Fletcher, Robert D., and Manos, N. E., **The importance of meteorological elements in spreading of smoke.** Procedures of Smoke Prevention Association of America, New York, June 1948 meeting. (Unpublished: manuscript available at Weather Bureau, D. C.). *Subject Headings:* **Atmospheric pollution, Weather conditions.**

A–212 ——— **General atmosphere pollution; symposium.** American Journal of Public Health, 38:957–69, July 1948. Dyktor, Herbert G., **Control program in Cleveland.** Ely, Sumner, B., **Some work in Pittsburgh air pollution problems.** Senn, Charles L., **Los Angeles smog.** Stern, Arthur C., **New York City's atmospheric pollution control problems.** *Subject Headings:* **Atmospheric pollution, Cleveland, Pittsburgh, Los Angeles, New York City.**

A–213 Hebley, Henry F., **Stability of atmosphere and its influence on air pollution.** Mechanical Engineering, 70(5): 407–413, May 1948.—Discussion of air currents, turbulence, stability, instability, etc., in Pittsburgh area. Diurnal cycle, combined with topography, seasons, etc., create unfavorable conditions when large scale weather pattern is just right. *Subject Headings:* **Atmospheric pollution, Weather conditions.**

A–214 Hemeon, W. C. L., **Air-pollution control.** Chemical Engineering Progress, 44:18–19, Nov., 1948.—Measured: rate of emission of stack effluent, ground level concentration in relation to the stack, effects of weather conditions; reasonable pollution level determined. Equation for dilution of gases with distance given, and an evaluation of the tests. *Subject Headings:* **Atmospheric pollution, Disperse systems, Weather conditions.**

A–215 Mills, C. A., and Mills-Porter, M., **Health costs of urban air pollution.** Occupational Medicine, 5(6):614–633, 1948. 20 tables, refs. **DSG**—Thorough article stating that death rates for pneumonia, pulmonary tuberculosis and respiratory tract cancer bear a direct and significant relationship to the intensity of pollution in urban atmospheres. Statistics given from Chicago and other city surveys. *Subject Headings:* **Atmospheric pollution, Public Health.**

A–216 Murdock, O., **Southern California foundries studying and testing methods to overcome smog air pollution.** Iron Age, 162(16):168+. Oct. 14, 1948.—Good short article on industries' starting costly smoke programs; experiments in cleaning smokes; history of situation in Los Angeles. Description of methods of control of stack emission. *Subject Headings:* **Atmospheric pollution, Smoke abatement, Los Angeles, California.**

A–217 Neuberger, H., **Condensation nuclei; their significance in atmospheric pollution.** Mechanical Engineering, 70(3):221–5, March 1948. fig., 5 tables, 20 refs.—Discussion of pollution. What may seem foreign to air is often an integral part of it. Atmospheric constituents discussed including "aerosols" of which there are two types, neutral particles or dust, and condensation nuclei, "active" dust. Chemical nature of condensation nuclei, sources, physical properties; comparison between two types of aerosol as to concentration, distribution, weather effects, etc. Biological effects. *Subject Headings:* **Atmospheric pollution, Condensation nuclei.**

†A–218 Patty, Frank A., **Sampling and analysis of atmospheric contaminants.** Chapter 8 of Industrial Hygiene and Toxicology, edited by Frank A. Patty. New York, Interscience Publishers' Inc., 1948, vol. 1:199–233. 11 figs., 5 tables, refs. (in Chap. 8).—An important work. Highly technical problems involved in sampling and analyzing air contaminants are discussed. Methods described have been found suitable and reliable in practice. *Subject Headings:* **Atmospheric pollution, Sampling and analysis.**

A–219 Porter, R. W., **Sound waves now harnessed for industry.** Chemical Engineering, 55(3):100, 1948.—Development of large-scale application of high-frequency sound waves in industry for aerosol agglomeration, recovery of smoke, dusts, mists. Projected application for dust recovery from flue gases, dispersion of natural fog, etc. *Subject Headings:* **Atmospheric pollution, Disperse systems, Coagulation, Smoke abatement.**

A–220 ——— **Smoke density recorder.** Chemical Industries, 63(3):482, Sept. 1948. Combustion, 20(4):65, Oct. 1948. fig. Brief account of an electronic device. *Subject Headings:* **Atmospheric pollution, Instruments.**

A–221 Stanford Research Institute. **The smog problem in Los Angeles county.** Report on first 12 months of research—June 1947, to June 1948. Los Angeles, 1948. 47. p., figs., tables DWB—Good review. Characteristics and mechanism of smog, prediction of smoggy days, irritants in smog, possible sources, reduced visibility, discussed. Appendices giving measurement and experiment methods. *Subject Headings:* **Atmospheric pollution, Smog, Los Angeles.**

A–222 Tucker, Raymond R., **It is not true that St. Louis smoke ordinance doesn't work.** Heating, Piping & Air Conditioning, 20(2):96–97, Feb. 1948. Table.—Answers to claims against St. Louis Smoke Ordinance. There has been great improvement in smoke conditions in St. Louis. Details given. *Subject Headings:* **Atmospheric pollution, Smoke abatement, St. Louis.**

A–223 Whittaker, H. A., et al., **Air pollution.** American Journal of Public Health, 38(6):761–9, June 1948. Refs. **DSG**—Smoke and dust problems. Relation to health. Inert smokes and dusts. Mucous membrane irritants. Malodorous substances. Sources, distribution. Testing devices. Radioactive substances and health. Control of pollen, gases, vapors, odors. Meteorological factors. Technical problems. City ordinances, etc. *Subject Headings:* **Atmospheric pollution, Public health.**

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A–224 ——— **Airborne dump in Los Angeles.** Time, 53:72+, April 25, 1949.—Popular article on the smog problem in Los Angeles as aggravated by tons of industrial waste, "aerial garbage," and inversion which holds smog down, and mountains. Action being taken. *Subject Headings:* **Atmospheric pollution, Smog, Los Angeles.**

A–225 Brandt, Allen D., **The "Donora incident."** Heating, Piping, and Air Conditioning, 21(4):97, April 1949.—Situation at Donora, and at Meuse, Belgium, 1930. Toxic gases. Atmospheric conditions. Tests. Results. Significance to ventilating engineers. *Subject Headings:* **Atmospheric pollution, Smoke abatement, Donora, Pa.**

A–226 Crozier, W. D., and Seely, Ben K., **Airborne particles collected on a transcontinental airplane flight.** New Mexico School of Mines, Research and Development Division Technical Report No. 1–NR. Contract N7ONR–405, Task 1, Project Designation No. NR–082, 013. Jan. 1949. 20 p., 4 figs., 10 refs. Navy Project. **DLC**—Significant collections of airborne particles were made with simple impactment equipment mounted in nose of airplane flying cross country, August 1948. Constituents of collections analyzed. Variations determined from point to point. Correlation of constituent concentrations and meteorological situations evident. Results suggest technique for study of convection and general air movement. *Subject Headings:* **Atmospheric pollution, Sampling and analysis, Weather conditions.**

A–227 Davidson, Bill, **Donora, the case of the poisoned air.** Colliers, p. 30–31+, Oct. 22, 1949. Popular account of Donora smog disaster, Oct. 1948. *Subject Headings:* **Atmospheric pollution, Smog, Donora, Pa.**

A–228 Fletcher, Robert D., **The Donora smog disaster—a problem in atmospheric pollution.** Weatherwise, 2(3):56–60, June 1949. 5 figs.—Meteorological and topographical conditions of region at time of disaster fully described. Conclusions drawn to assist in forecasting smog conditions and to aid in economic planning to avert future disasters. *Subject Headings:* **Atmospheric pollution, Smog, Weather conditions, Forecasting, Donora, Pa.**

A–229 Gordon, W. R., **Darkening Africa; industrial growth is bringing smoke.** Smokeless Air, 19(69):52, Spring 1949. **DWB**—Growing problem of air pollution, smoke and fog, in Rand towns, South Africa. Careless stoking a fault. Public opinion needs enlightening. *Subject Headings:* **Atmospheric pollution, South Africa.**

A–230 Great Britain, Department of Scientific and Industrial Research, Fuel Research Station, **The investigation of atmospheric pollution;** a description of the aims and objects of the investigation and an account of the methods recommended for making systematic measurement of air pollution. (not published for sale; brochure may be obtained on application to the Director, Fuel Research Station, Blackwall Lane, Greenwich, London, S.E. 10), (title unchecked). Review: Smokeless Air, 19(69):48, Spring 1949. *Subject Headings:* **Atmospheric pollution, Great Britain.**

A–231 Hand, I. F., **Atmospheric contamination over Boston, Massachusetts.** American Meteo ological Society, Bulletin, 30(7):252–254, September **1949.** 2 figs., 3 tables, refs. Discussion.– Observing sites and instrumental equipment described. Variation in solar and sky radiatio tabulated for Blue Hill and Boston. Seasonal and diurnal variations. Diurnal variation Effect on health. Discussion of relation of smoke and meteorological conditions in genera *Subject Headings:* **Atmospheric pollution, Weather conditions, Boston, Mass.**

A–232 Logan, W. P. D., **Fog and mortality,** Smokeless Air, 19(69):42–43, Spring **1949.**– Statistics of death rate in relation to fog of late Nov. 1948, in London. *Subject Headings:* **Atmo pheric pollution, Public health, London.**

A–233 Meetham, A. R., **La pollution atmosphérique.** [Atmospheric pollution]. La Météo ologie, 4e Series, 13:1–17, Jan./Mar. **1949.** 9 figs., 3 tables, refs. **DWB, MH-BH**—Summary French and English. Digest in French of the comprehensive study of atmospheric pollutio made at Leicester, 1945. Great Britain Department of Scientific and Industrial Researc *Subject Headings:* **Atmospheric pollution, Leicester, England.**

A–234 Mukherjees, S. M., **On the diurnal variation of condensation nuclei and visibility Colaba (Bombay), and related changes in the earth's electric field.** Journal of Geophysic Research, 54(2):173–176, June **1949.** 5 figs., table. **DWB**—Hourly observations of condensatio nuclei, electrical conductivity, and visibility of the air were taken, analyzed and compared with th corresponding values of potential gradient and winds. The principal variation of the earth electrical field found to be directly related to air-contamination. Effects of monsoon discusse *Subject Headings:* **Atmospheric pollution, Condensation nuclei, Visibility, Electrical conductivit of air, Weather conditions, Bombay, India.**

A–235 Neuberger, H., **Air pollution.** Mineral Industries, Pennsylvania State College, 18(5):1– Feb. **1949, DGS**—Aerosols as condensation nuclei discussed. Natural pollution of air, b volcanoes, desert winds, etc., with that caused by man compared. Effects of meteorological an topographical conditions discussed. Pollutants could be prevented from escaping into the air o provisions made for controlled emission to take advantage of weather conditions that would fav their disposal. *Subject Headings:* **Atmospheric pollution, Condensation nuclei, Weather condi tions, Forecasting, Aerosols.**

A–236 Richardson, E. G., **The use of smoke in the study of atmospheric movements.** Weathe 4(10):334–336, Oct. **1949.** 2 plates.—Discussed are applications of smoke to the study of loca atmospheric motions comprising areas ranging from a few square inches to a hundred square fee *Subject Headings:* **Atmospheric pollution, Disperse systems.**

A–237 ——— **Rochdale's smokeless zone.** Smokeless Air, 19(69):36, Spring **1949.**—Actio taken in Rochdale, Lancashire, in a plan to gradually abolish the smoke of the city. Smok forbidden in one zone. *Subject Headings:* **Atmospheric pollution, Smoke abatement, City planning Rochdale, England.**

A–238 Salmon, Vincent, **Smog and sonics.** Scientific Monthly, 69(4):216–221, Oct. 194 3 figs.—Author is concerned with the conditions leading to the formation of smog and the ro played by the particulate components. The removal of these components by sonic means co sidered in some detail. *Subject Headings:* **Atmospheric pollution, Smog, Coagulation.**

*†**A–239** Schrenk, H. H., Wexler, Harry, et al., **Air pollution in Donora, Pa.;** epidemiology of th unusual smog episode of October 1948; preliminary report. Public Health Bulletin No. 30 Washington, D. C., **1949.** 173 p., 90 figs., 73 tables, refs. **DWB**—A major work on the Donor episode. Section on biological studies includes mainly aspects of health, illness, and mortality A section on atmospheric studies includes: collection and determination of contaminants fro plants and domestic sources; meteorological investigation, micrometeorology of the Monongahel River Valley, vicinity of Donora, wind mechanism, etc.; meteorological conditions and atmospher contaminants. There is a discussion of the cause of the episode, summary and recommendation and appendices. This is a most thorough and recent study of atmospheric pollution and it relation to weather, as exemplified at Donora. *Subject Headings:* **Atmospheric pollution, Smo Public health, Weather conditions, Donora, Pa.**

*†**A–240** ——— **Symposium on atmospheric contamination and purification.** Industrial and Eng neering Chemistry, 41(11):2383–2493, Nov. 1949. figs., tables, refs. A collection of majo importance, including much scientific data, tables, graphs, extensive refs. Contents by autho

and title: Introduction; Swain, Robert E., **Smoke and fume investigations;** McCabe, L. C. et al, **Dust and fume standards;** Hartmann, M. L., **Legal regulation of air pollution;** Steffens, C., **Measurement of visibility by photographic photometry;** Chen, W. L. and Charmbury, H. B., **Location of dust producing areas;** Baron, T., Gerhard, E. R., and Johnstone, H. F., **Dissemination of aerosol particles dispersed from stacks;** Thomas, M.D. et al, **Dispersion of gases from tall stacks;** Johnstone, H. F. and Roberts, M. N., **Deposition of aerosol particles from moving gas streams;** St. Clair, Hillory W., **Agglomeration of smoke, fog, or dust particles by sonic waves;** Katz, Morris, **Sulphur dioxide in atmosphere and its relation to plant life;** MacIntire, W. H. et al, **Effects of fluorine in Tennessee soils and crops;** Magill, Paul L., **The Los Angeles smog problem;** McCabe, L. C. et al, **Industrial dusts and fumes in the Los Angeles area.** There are also other articles of strictly technological nature. *Subject Headings:* **Atmospheric pollution, Smoke abatement.**

PART III. METEOROLOGICAL ARTICLES APPEARING IN RECENTLY ISSUED PUBLICATIONS

Note: In this section will be given titles of articles received too late to be included in Part I. These items will not be indexed, and will be subject to space limitations.

nerican Geophysical Union, Transactions, v. 30, no. 4, Aug. 1949.

Baum, Werner A., and Court, Arnold: **Research status and needs in micrometeorology,** p. 488–493.

Isaacs, J. D., and Wiegel, R. L.: **The measurement of wave heights by means of a float in an open-end pipe,** p. 501–506.

Donn, William L.: **Studies of waves and swell in the western North Atlantic,** p. 507–516.

Langbein, Walter B.: **Computing soil temperatures,** p. 543–547.

Anderson, Henry W.: **Flood frequencies and sedimentation from forest watersheds,** p. 567–584. Discussion by Leonard Schiff, p. 584–586.

nerican Geophysical Union, Transactions, v. 30, no. 5, Oct. 1949.

Leighly, John: **Climatology since the year 1800,** p. 658–672.

McNish, A. G., and Lincoln, J. V.: **Prediction of sunspot numbers,** p. 673–685.

Potter, W. D.: **Effect of rainfall on magnitude and frequency of peak rates of surface runoff,** p. 735–751.

eofisica Pura e Applicata, v. 14, no. 3–4, April–June 1949.

Thams, J. C.: **La radiazione globale relativa secondo le diverse specie di nebulosita,** [Relative global radiation according to various kinds of cloudiness], p. 163–172.

Berg, H.: **Beziehungen Zwischen Temperatur-und Niederschlagsanomalien,** [Relations between temperature and precipitation anomalies], p. 173–188.

Ertel, Hans and Rossby, Carl-Gustaf: **A new conservation-theorem of hydrodynamics,** p. 189–193.

Bossolasco, Mario: **Variazioni del moto polare della terra e loro correlazioni meteorologiche,** [Variations of polar motion of the earth and their meteorological correlations], p. 197–202.

mbus, v. 1, no. 1, Jan.–March 1949.

Rico Negretty, José J.: **Variaciones de las precipitaciones annuales,** [Variations of annual precipitation], p. 16–21.

Mansilla Romero, H.: **El viento y las construcciones,** [Wind and its construction], p. 22–30.

Bergeiro, José Maria: **Instante medio climatológico diario.** [Mean daily climatological "Instante"], p. 31–35.

Pérez Alcalá, Raúl and Rico Negretty, J. J.: **El problema de la langosta en Bolivia,** [The locust problem in Bolivia], p. 36–50.

Braun, Otto: **Clasificación vertical del clima de Bolivia,** [Vertical classification of the climate of Bolivia], p. 51–52.

Tellus, v. 1, no. 1, Feb. 1949. (In English).

Pettersson, Hans: **Geochronology of the deep ocean bed,** p. 1–5.

Rydbeck, O. E., Hand, Stranz, D.: **Onospheric effects of solar flares 1948;** preliminary repor No. 1, p. 6–21.

Palmén, E.: **Origin and structure of high-level cyclones south of the maximum westerlies** p. 22–31.

Bergeron, Tor: **The problem of artificial control of rainfall of the globe. I. General effects o ice-nuclei in clouds,** p. 32–43.

Nyberg, Alf: **An aerological study of large-scale atmospheric disturbances,** p. 44–53.

Rossby, C.-B.: **On the dispersion of planetary waves in a barotropic atmosphere,** p. 54–58.

Tellus, v. 1, no. 2, May 1949. (In English).

Norinder, Harold: **On the measurement and nature of atmospherics produced by electri discharges in snow squalls and from other sources,** p. 1–13.

Berggren, R., Bolin, B., and Rossby, Carl-Gustav: **An aerological study of zonal motion, it perturbations and breakdown,** p. 14–37.

Charney, J. G., and Eliassen, A.: **A numerical method for predicting the perturbations in th middle-latitude westerlies,** p. 38–54.

Malmfors, K. G.: **Recordings of cosmic radiation,** p. 55–61.

Hovmöller, Ernest: **The trough-and-ridge diagram,** p. 62–66.

Vsesoiuznoe Geograficheskoe Obshchestvo, Izvestiia, v. 81, no. 4, July–Aug. 1949.

Tauber, G. M.: **Plavanie v Antarktike v 1947–1948gg,** [Expedition to the Antarctic in 1947 1948], p. 369–385.

Vsesoiuznoe Geograficheskoe Obshchestvo, Izvestiia, v. 81, no. 5, Sept.–Oct. 1949.

Aleiner, A. Z., **Geograficheskie predstavleniia ob Antarktike s drevneishikh vremen do i- Russkoi Antarkticheskoi ekspeditsii i ikh otrazhenie na kartakh,** [Geographic concept c the Antarctic from ancient times to the first Russian Antarctic expedition and its repre sentation on maps], p. 484.

Khromov, S. P.: **Sinopticheskaia meteorologiia kak geograficheskaia nauka,** [Synoptic meteor ology as a geographical science], p. 528.

Zeitschrift für Meteorologie, v. 3, No. 7, July 1949.

Lauter, E., and Sprenger, K.: **Raumwellen-Beobachtungen (=1250m) bei Nordlichtern im Jahre 1947,** [Atmospheric wave observations (=1250m) during displays of aurora boreali in 1947], p. 193–198.

Bolz, H. M.: **Die abhängigkeit der infraroten Gegenstrahlung von der Bewölkung,** [On th dependence of infra-red atmospheric counter-radiation on cloudiness], p. 201–203.

Lauter, E. A.: **Ausbreitungsbeobachtungen von Rundfunkwellen auf =1250m während de Auftretens von Mögel-Dellinger-Effekten,** [Observations of propagation of radio wave at 1250m during the occurrence of Mögel-Dellinger-effects], p. 204–206.

Sprenger, K.: **Selbstschreibender Impulszähler, beispielsweise zur Registrierung der kosmische Strahlung,** [Self registering impulse-recorder for registering cosmic radiation], p. 206–208

Kilinski, Erich v.: **Ein Verfahren zur Registrierung der Unruhe des luftelektrischen Potentiall gefälles mit Potentialsonden,** [A process for registering the disturbance of atmospher electric gradients by means of a potential sounding device], p. 208–209.

Reinhard, H.: **Die Sturmflut am 1. und 2. März 1949 an der Mechlenburgischen Ostseeküste** [The tidal wave on March 1 and 2, 1949 on the Mecklenburg coast of the Baltic Sea], p. 209–218.

Maede, Hans: **Über eine Gliederung und Zusammenfassung typischer Wetterlagen (Ein Beitrag zur Witterungsklimatologie Norddeutschlands, dargestellt am Beispiel Greifswald),** [On a classification and interpretation of typical weather situations (A contribution to th synoptic climatology of north Germany, using Greifswald as an example).], p. 218–222.

PART IV. AUTHOR AND SUBJECT INDEX

In this section will be found reference to the numbers given at the head of each abstract or ıtry in Part I (each such entry begins with the number 1—), and in the Atmospheric Pollution ibliography, Part II (each such entry begins with the letter A—). For complete explanation indexing system, see Introduction. This index is divided into four parts:

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